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# THE LANCET

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## CONTENTS

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**ORIGINAL ARTICLES**

Changes in Medical Education — J. R. ELLIS, F.R.C.P. ..... 867
Effect of Oxygen on Exercise Ability in Chronic Respiratory Insufficiency — J. E. COTES, M.B.C.P.; J. C. GILSON, M.R.C.P. ..... 872
Bronchial Carcinoma — J. R. BIGNALL, M.R.C.P. ..... 876
Radiotherapy of Cancer of the Lung — JOSEPH SMART, F.R.C.P.; GWEN HILTON, F.R.C.S. ..... 880
The Hornpipe Position — A. H. HUNT, F.R.C.S.; KINGSLEY LAWRANCE, F.R.C.S.; MICHAEL WHITELEY, M.B. ... 881
Weight Loss and Pernicious Anæmia — A. E. READ, M.R.C.P.; RICHARD ASHER, F.R.C.P. .... 882
A Short Small Intestine Associated with Fibrosis of the Liver — C. RAEBURN, M.R.C.S.; A. J. BRAFIELD, M.B. ..... 884
Effect of Triiodothyroacetic Acid on Blood-cholesterol Levels — W. R. TROTTER, M.R.C.P. .... 885
The Physiological Activity of Tetraiodothyroacetic Acid — A. W. G. GOOLDEN, M.B. ..... 890
Cardiac Pain from Œsophageal Lesions — GEOFFREY BOURNE, F.R.C.P. 892

**NEW INVENTIONS**

A Cheap Syringe Stop — P. W. R. M. ALBERTI ..... 893

**REVIEWS**

Notices of Books ..... 893

**IN ENGLAND NOW**

A Running Commentary by Peripatetic Correspondents ... 912

**LEADING ARTICLES**

THE MILLERS DECIDE ..... 895
THYROID HORMONES AND CORONARY DISEASE ..... 896
MEDICINE IN THE CARIBBEAN ... 897

**ANNOTATIONS**

Deadly Sweets ..... 898
Thiopentone in Obstetric Anæsthesia ..... 898
Cause of Hypoglycæmic Symptoms ..... 899
Leucotomy and the Family ..... 899
Streptococci and Rheumatic Relapses ..... 900
Birthday Honours ..... 900

**SPECIAL ARTICLES**

Flour ..... 901
Invalid Hoists and Similar Nursing Aids — H. R. RISHWORTH, F.R.C.S. ... 903
Use of Hospital Records in Research ..... 905
General Medical Council ..... 905
Birthday Honours ..... 907

**LETTERS TO THE EDITOR**

Anæsthesia in Obstetrics (Dr. J. S. Crawford; Mr. D. J. MacRae, F.R.C.O.G.; Dr. L. Kaufman; Dr. Douglas Belfrage) ..... 913
Fats and Disease (Mr. J. E. Nyrop, M.SC.) ..... 914
Lymphatic Drainage of the Breast (Mr. R. T. Turner-Warwick, F.R.C.S.) ..... 915
Diabetes and Parity (Dr. R. B. McConnell; Dr. Eve Straton) 915
Home Confinements (Dr. J. A. Scott) ..... 915
Paraplegia Following Spinal Anæsthesia (Dr. L. H. Lerman; Dr. G. C. Steel) ..... 915
Medicines for Hospital Outpatients (Mr. A. E. Grimshaw) 916
Oral Streptomycin in Bacillary Dysentery (Dr. J. S. Rivers) .. 916

**CONFERENCES AND CONGRESSES**

Medical Research in the Caribbean ..... 909
Fertility and Sterility ..... 910

**PUBLIC HEALTH**

Health Visiting ..... 908
Infectious Diseases in England and Wales ..... 909

**PARLIAMENT**

Medical Problems on the Roads 916
Safety, Health, and Welfare in Agriculture ..... 916
Question Time ..... 917

**OBITUARY**

Wilfrid Paton Philip ..... 917
Norman Darroch Begg ..... 917
Eleanor Joyce Partridge ..... 918
John Christopher Eyre Peshall .. 918

**NOTES AND NEWS**

Changes in Social Responsibility 919
The Right Sort of Appeal ..... 919
Family Planning Association .... 919
Home for Handicapped Women .. 919
Approved Names for Drugs .... 919
The Cambridge Long Vacation .. 920
A New Indian Hospital Journal .. 920

University of Cambridge ..... 920
University of London ..... 920
University of Liverpool ..... 920
Queen's University, Belfast ..... 920
University of Western Australia . 920
Royal College of Surgeons of England ..... 920
Ryle Memorial Prize ..... 920
United Kingdom Committee for Poliomyelitis ..... 920
Research into Ageing ..... 920
International Congress of Internal Medicine ..... 920
Medical Golfing Society ..... 920

Diary of the Week ..... 920
Appointments ..... 918
Births, Marriages, and Deaths ... 918

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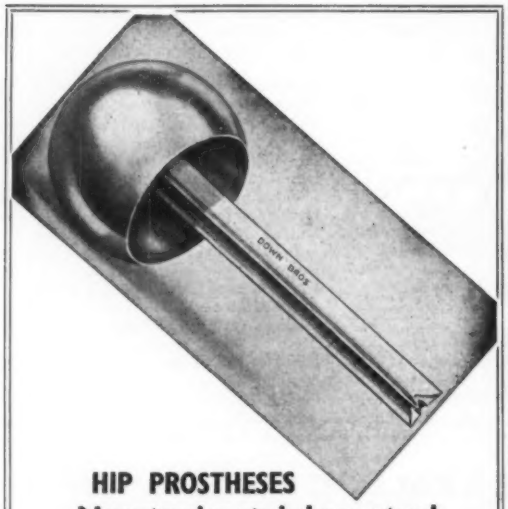


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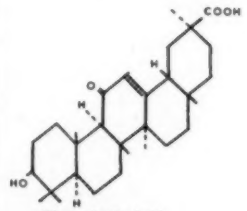

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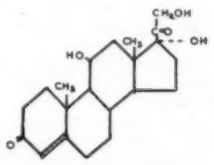

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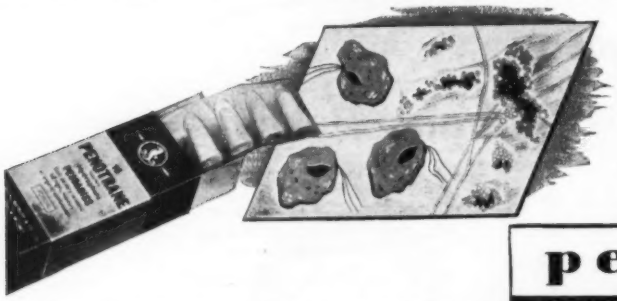


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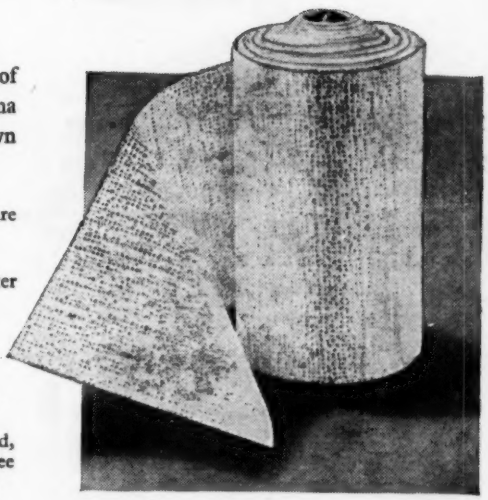

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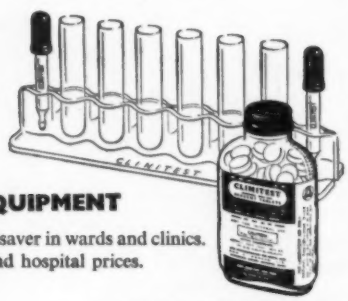


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(1954) '*Medicine Illustrated*', *May, p. 289*
(1954) '*Practical Clinical Biochemistry*', *Heinemann, p. 74*
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*Lancet, 1951. ii., 749*
*Jnl. Aviation Med., 16 : 59, 1945*

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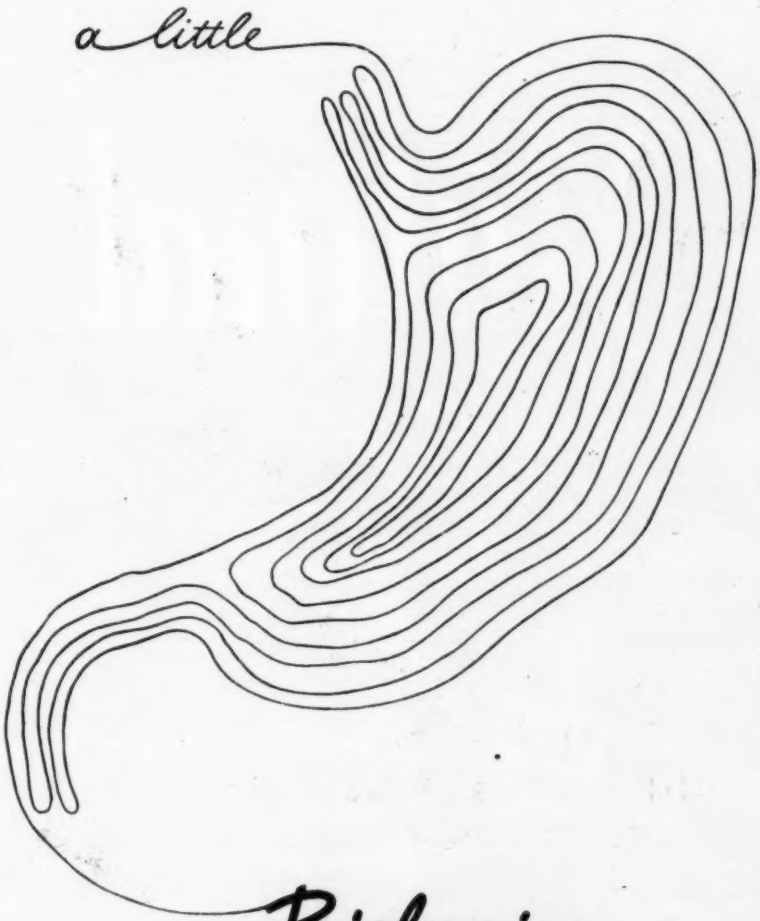


**Bislumina**

**GOES A LONG WAY**

Detailed literature on request from
Sole Distributors in United Kingdom

**C. J. HEWLETT & SON LTD.**
**King George's Avenue, Watford, Herts.**

Bislumina is packed in the freshly precipitated state ensuring that the fine particles present the largest possible surface area for the sequestration of pepsin, and adhere firmly to the gastric mucosa. Added to these properties is an effective antacid action. Bislumina provides comprehensive therapy and because of the method of preparation high efficiency is attained with low dosage.

*Bislumina is a registered trade mark*

*Manufactured by* MINING & CHEMICAL PRODUCTS LIMITED, LONDON.

*In accordance with world patents pending.*

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Benactyzine Hydrochloride

the **new** oral tranquillizing agent

NŪTINAL has an action which has been likened to the placing of a barrier between the patient and his illogical worries blocking the flow of unproductive thought.

NŪTINAL is of great value in the treatment of a variety of psychoneurotic states, especially those associated with anxiety, depression and obsessive-compulsive traits.

**NŪTINAL**

Bottles of 100 tablets each containing 1 mg. benactyzine hydrochloride

*Basic N.H.S. Price* **3/4½** *per bottle of 100 tablets. Full details gladly sent on request.*

**BOOTS PURE DRUG COMPANY LIMITED, STATION STREET, NOTTINGHAM, ENGLAND**

Boots

# INTRAMUSCULAR ADMINISTRATION OF IRON IN PREGNANCY

THIS WOMAN is six months pregnant. It will be her fourth child. Increased intake of iron is essential on account of foetal demands. It is even more important in repeated pregnancies since the equivalent of 750 mg. iron may be lost with each pregnancy.

A CLEAR CASE FOR IMFERON, new iron-dextran complex. Imferon is the first safe and effective intramuscular iron. It will restore the haemoglobin concentration rapidly and reliably. Brit. Med. J. 1954, 2, 1257.

FULLY-DESCRIPTIVE LITERATURE is available and a Technical Information Service is always at your disposal.

**A clear case for IMFERON** IRON-DEXTRAN COMPLEX TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL CHESHIRE

A PRODUCT OF BENGER RESEARCH

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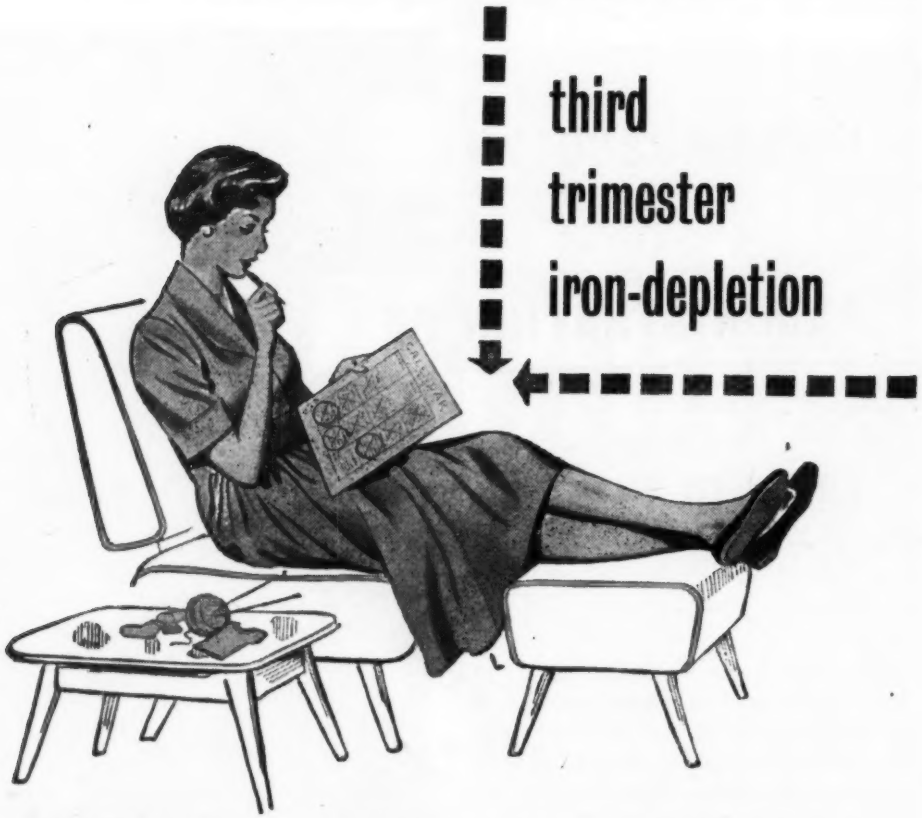


# CEREVON . . . oral organic iron therapy

During the third trimester the increasing rate of foetal growth makes heavy demands on the maternal iron reserves which are not adequately met by the normal dietary intake.

**The risk of gastric upset from ferro-therapy during this period is considerably lessened by the administration of CEREVON (Ferrous Gluconate)—an organic iron—which will rapidly build up the deficit of iron in the tissue depots to the mutual benefit of the expectant mother and foetus.**

CEREVON is available in both tablet and palatable liquid form. In addition to the organic iron Ferrous Gluconate, ELIXIR CEREVON contains the Vitamin B complex, a valuable adjuvant to the ante-natal regime.

**CEREVON ELIXIR**

FORMULA: *Each teaspoonful contains: Ferrous Gluconate 300 mgm., Aneurine Hydrochloride 1 mgm., Riboflavin 1 mgm., Nicotinamide 10 mgm.*

**CEREVON TABLETS**

FORMULA: *Each tablet contains: Ferrous Gluconate 300 mgm.*

**CEREVON**

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VISMARA TERAPEUTICI
CASATENOVO (COMO) ITALY

evidence collected over two years has confirmed the value of

# antemovis

anti-haemorrhagic factor of platelets
in controlling bleeding in medical and surgical conditions

available in boxes of 5 ampoules of 5 mg of double sulphate of 5-hydroxytryptamine and creatinine

for intravenous, intramuscular, topical use

Literature on request

THIS MAN is in shock. His blood pressure must be raised swiftly and maintained, now, during any operation which may follow, and in the post-operative period.

A CLEAR CASE FOR DEXTRAVEN, the established clinical dextran solution.

DEXTRAVEN raises the blood pressure swiftly and surely, and stays in the circulation in significant concentration during the critical 24 hours.

DEXTRAVEN can be given immediately by intravenous infusion. It is stable indefinitely under all climatic conditions—no special storage precautions are necessary. DEXTRAVEN is approved by the Ministry of Health. Fully descriptive literature is available and a Technical Information Service is always at your disposal.

## A clear case for DEXTRAVEN

TRADE MARK

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A BENGER PRODUCT

D7

DRAMAMINE* IN VERTIGO

# Labyrinthine Disturbance

*Long recognised as a standard for the management of motion sickness, Dramamine has become accepted in the control of a variety of other clinical conditions characterised by vertigo.*

Vertigo, it has been claimed†, is primarily due to a disturbance of those organs of the body that are responsible for body balance. When the posture of the head is changed, the gelatinous substance in the semi-circular canals begins to flow. This flow initiates neural impulses which are transmitted to the vestibular nuclei. From this point impulses are sent to different parts of the body to cause the symptom complex of vertigo.

Some impulses reach the eye muscles and cause nystagmus ; some reach the cerebellum and skeletal muscles and righting of the head results ; others activate the emetic centre to result in nausea, while still others reach the cerebrum making the person aware of his disturbed equilibrium. *Vertigo may be caused by a disease or abnormal stimuli of any of these tissues involved in the transmission of the vertigo impulse, including the cerebellum and the end organs.*

A possible explanation of Dramamine's action is that it depresses the overstimulated labyrinthine structure of the inner ear. Depression, therefore, takes place at the point at which these impulses, causing vertigo, nausea and similar disturbances, originate. Some investigators have suggested that Dramamine may have an additional sedative effect on the central nervous system.

Repeated clinical studies have established Dramamine as valuable in the control of the symptoms of Menière's syndrome, radiation sickness, hypertension vertigo, the vertigo of fenestration procedures, labyrinthitis and vestibular dysfunction associated with antibiotic therapy, as well as in motion sickness.

Any of these conditions in which Dramamine is effective may be classed as " disease or abnormal stimuli "† of the tissues including the end organs (gastro-intestinal tract, eyes) and their nerve pathways to the labyrinth.

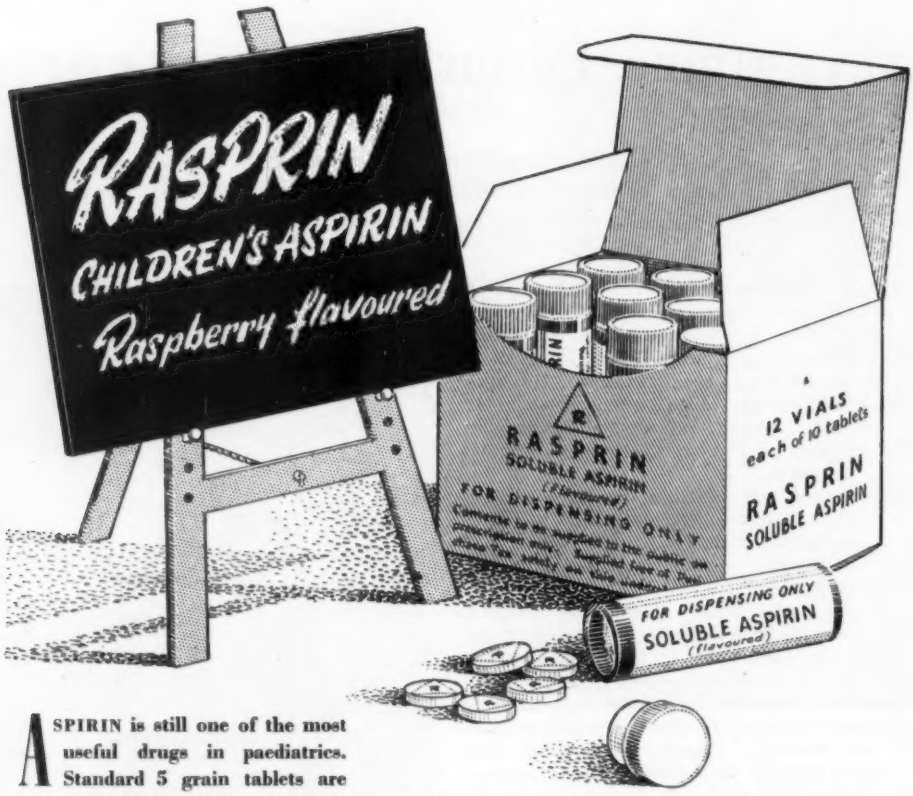
Dramamine (brand of dimenhydrinate) is supplied in tablets of 50 mg. in bottles of 12, 36, 100 and 1000 tablets and in cartons (10 strips of 10 tablets). G. D. Searle & Co., Ltd., 83, Crawford Street, London, W.1.

*The site of Dramamine's action is probably in the labyrinthine structure.*

* *Regd. Trade Mark*

†" Dizziness " : Vertigo and Syncope, G.P. 8:35 (Nov.) 1953.

SEARLE




**ASPIRIN is still one of the most useful drugs in paediatrics. Standard 5 grain tablets are not easy to administer, and may cause dosage difficulty. Rasprin tablets have been introduced to meet the need for a safe, prescribable children's aspirin. Each Rasprin tablet gives 1¼ grains of soluble calcium aspirin (equivalent to a quarter of a standard aspirin tablet), making dosage simple, even for infants.**

**Safe**
Each 10 Rasprin tablets is packed in a plastic vial. The amount of aspirin in each container is therefore limited to a total of 12½ grains, making accidental overdose impossible. Rasprin disintegrates in the mouth so quickly that there is no possibility of choking.

**Soluble**
Each Rasprin tablet contains calcium carbonate, which reacts with the aspirin to produce soluble calcium aspirin; together with citric acid, to start the reaction and ensure quick disintegration.

**Pleasant**
Rasprin tablets have an inviting colour and a pleasant raspberry flavour which makes them very acceptable to young children.

**Economical**
Rasprin is distributed in special dispensing packings, and is free of Purchase Tax. The prescription price is 4d. per vial of 10 tablets.

**On Prescription Only**
Rasprin is not advertised to the lay public, and may be prescribed on Form E.C. 10.

The
ELECTRIC BLANKET in the TUBE

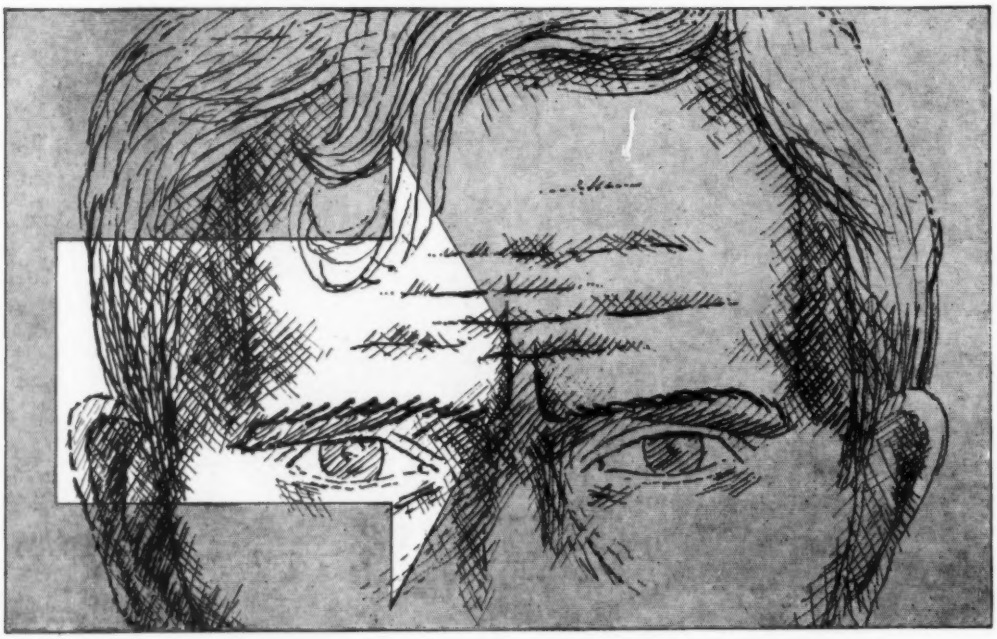
FINALGON Regd. Trade Mark
OINTMENT

Produces a glowing feeling of warmth
which lasts for hours
and relieves rheumatic pain

Tube of 20 g.

COMPOSITION :
Nonylic acid vanillylamide 0.4% and
Nicotinic acid-β-butoxyethyl ester
2.5% in a suitable ointment base
5073/E

LEWIS LABORATORIES LTD., LEEDS 9



# *Cool-headed Therapy*

It is often necessary to calm a feverish patient in addition to lowering his temperature.

Veganin is not only an antipyretic but also contains codeine phosphate to exert a sedative effect. The three ingredients of Veganin are carefully balanced to ensure maximum effect for the least dose. Under their synergistic influence, the patient is quickly soothed and his temperature safely reduced.

ACTIVE PRINCIPLES: *Acetylsalicylic acid 250 mg. Phenacetin 250 mg. Codeine phosph. 10 mg.*

DOSE: *1 or 2 tablets, 2 or 3 times a day, depending on the severity of the pain.*

PACKING: *Packs of 10, 20 and 50 tablets. Dispensing packs of 100 and 500 tablets available to chemists.*

## VEGANIN

*No Warner preparation has ever been advertised to the Public*

WILLIAM R. WARNER & CO. LTD., POWER ROAD, LONDON, W.4.

# A new capillary haemostatic

# ADRENOXYL

# for medical and surgical conditions

*Clinically proven to reduce bleeding-time without effect on coagulation or blood pressure, and to have no undesirable side effects*

**ADRENOXYL**, a product of original research, reduces the mean bleeding-time by decreasing the permeability and increasing the contractility and resistance of the capillaries. Its effectiveness in diminishing blood loss has been demonstrated by clinical studies.

**ADRENOXYL** has no effect on coagulation. It neither increases nor decreases blood pressure.

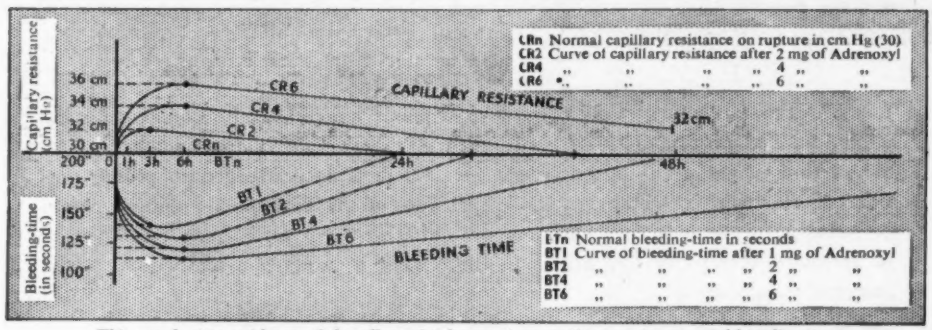
**ADRENOXYL** is non-toxic, and there are no contra-indications to its use.

**ADRENOXYL** is indicated in the preventive and curative treatment of all types of capillary bleeding.

**ADRENOXYL** has been successfully used to diminish capillary bleeding in a wide range of surgical operations, and has proved particularly useful in ear, nose, and throat surgery, ophthalmic surgery, thoracic surgery, gastro-intestinal surgery, plastic surgery and urogenital surgery. It has also been used successfully in many medical conditions associated with capillary haemorrhage or where capillary fragility is a feature.

**ADRENOXYL** may be administered by mouth or by subcutaneous or intramuscular injection. The oral form is for routine treatment, though when rapid action is desired the intramuscular route is recommended.

**ADRENOXYL** is now available in boxes of 6 or 50 ampoules: tubes of 25 tablets or bottles of 500 tablets.




*This graph gives evidence of the effect of Adrenoxyl on capillary resistance and bleeding-time*

**BIBLIOGRAPHY**

Observations cliniques sur l'action hémostatique de l'Adrénoxyl.
*Ars. Medici* 1948, 3, 57

L'Adrénoxyl comme hémostatique en otorhinolaryngologie
*Ars. Medici* 1949, No. 4, 295

La semicarbazone de l'adrénochrome.
*Sem. Hôp.* 1950, 26, 3347

Recherches cliniques sur l'action hémostatique, dynamogène et vitaminique P de l'adrénochrome (Adrénoxyl).
*Praxis* 1951, 40, 713

Zur Frage der Blutungsprophylaxe bei Bulbuseröffnenden Operationen.
*Schweis. Med. Woch.* 1952, No. 17, 484

La semicarbazone de l'adrénochrome: hémostatique biologique à action tissulaire.
*Rev. Stomat.* 1947, 48, 616

Hémostase on chirurgie plastique, emploi de la monosemicarbazone de l'adrénochrome.
*Rev. L.O.R.* 1948, 380.

*Literature and samples on request.*

**HORLICKS LIMITED**
*Pharmaceutical Division, Slough, Bucks.*

In difficult situations, successful recovery depends largely on the countermeasures adopted. This is particularly so in dealing with many of the skin infections met with at this time of the year. ACHROMYCIN tetracycline is acknowledged to possess outstanding merits in controlling pyogenic infections of the skin and for the prevention of infection in wounds and abrasions. To the doctor it offers unsurpassed scope in antibiotic therapy of the skin . . . to the patient it promises assurance of speedy, uneventful recovery.

**ACHROMYCIN*** TETRACYCLINE **OINTMENT**

***combats the infection . . . hastens the recovery***

Achromycin is also available as: CAPSULES . EAR SOLUTION . INTRAMUSCULAR . INTRAVENOUS . OPHTHALMIC POWDER STERILIZED OPHTHALMIC OINTMENT . ORAL SUSPENSION PEDIATRIC DROPS . SOLUBLE TABLETS . SPERSOIDS* Dispersible Powder . SYRUP . TABLETS TROCHES

*Regd. Trade Mark

ACHROMYCIN antibiotic

50 Lederle FIFTIETH ANNIVERSARY

**LEDERLE LABORATORIES DIVISION**

*Cyanamid* PRODUCTS LTD. LONDON, W.C.2

*A well-proved formula*

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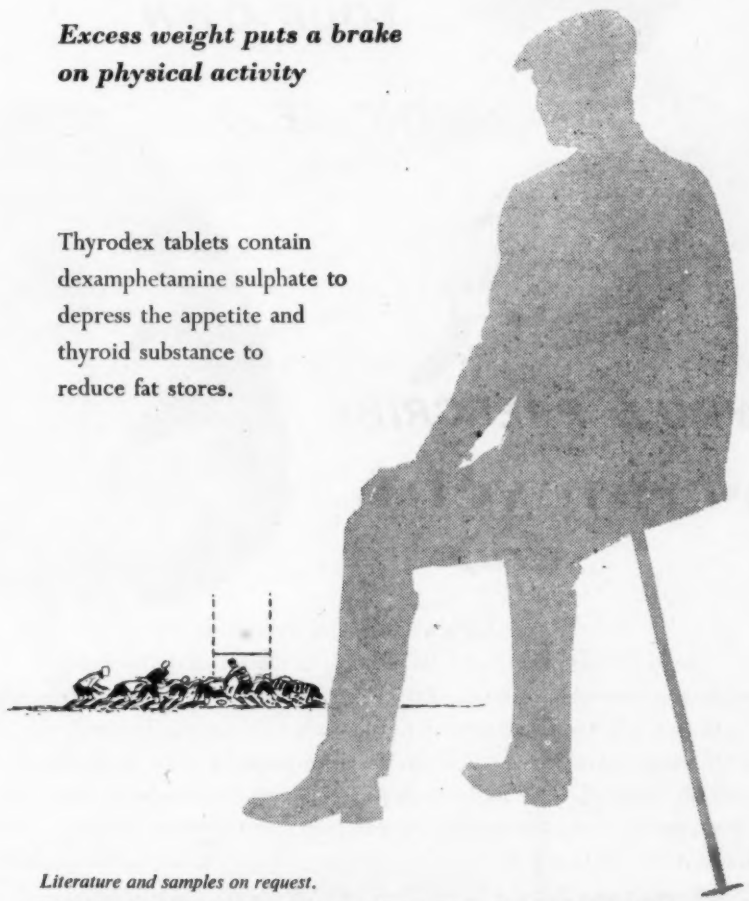
## TABLETS

***Excess weight puts a brake on physical activity***

Thyrodex tablets contain dexamphetamine sulphate to depress the appetite and thyroid substance to reduce fat stores.



*Literature and samples on request.*

**PAINES & BYRNE LTD., Pabyrn Laboratories, Greenford, England.**

**IF YOU HAD TO TAKE YOUR OWN MEDICINE...**

**...YOU'D PRESCRIBE**

# Terramycin*

BRAND OF OXYTETRACYCLINE

**syrup**

Quite a challenging hypothesis, Doctor, but your young patients would wish the point to be illustrated dramatically. Especially since the administration of the new TERRAMYCIN syrup is quite the most convenient, safe and palatable way to combat a wide range of bacterial, viral, and rickettsial infections. Hydrolysing quickly in the gastro-intestinal tract TERRAMYCIN Syrup readily yields the pure antibiotic in powerfully effective concentrations. Isn't this the way you—*mutatis mutandis*—would prefer to take your own medicine? Of course it is. And that is why you will have no difficulty in persuading paediatric patients that TERRAMYCIN Syrup is "very good medicine indeed". Even the most recalcitrant youngster will be won over by its pleasing cherry flavour.

*Supplied in bottles 60 ml. Each large teaspoonful (5 ml.) of which contains 125 mg. of oxytetracycline activity.*

Pfizer **WORLD'S LARGEST PRODUCER OF ANTIBIOTICS**

PFIZER LTD · FOLKESTONE · KENT

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# The food that has everything

COMPLAN contains everything the patient needs in the way of essential nutrients to sustain life indefinitely. It can be administered either by tube, for which it is ideally suited, or by cup. The food is palatable, throws no strain on the digestion, and is extremely well tolerated.

In the field of human nutrition the advent of a truly compre[hensive] ...as long been awaited. With the introduction of Complan, a new ... portant need is at last fulfilled.

The scope for ... less in general practice ... ry functions are to sup... atients unable or unwilling ... to provide a valuable ... t a m i n - mineral supp...

With ... the physician c... patient's diet i... the essential ... nutrition, for ... precisely what he... Prepared with as ... a cup of cocoa and ... than a table fork, Complan is eminently ... for hospital and home use alike.

*You are invited to make a personal appraisal of Complan, and we will be glad to post to you a sample pound package if you will send your name and address to:*

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| | 100 GM. |
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| | 31 gm. |
| | 16 gm. |
| | 44 gm. |
| | 5 mg. |
| | 780 mg. |
| | 400 mg. |
| Chloride (as Cl) | 740 mg. |
| Potassium | 1,100 mg. |
| Iron | 8 mg. |
| Vitamin A | 1,100 units |
| Vitamin $B_1$ | 1.2 mg. |
| Riboflavine | 1.1 mg. |
| Nicotinic Acid | 7.7 mg. |
| Pantothenic Acid | 3.0 mg. |
| Choline | 74.0 mg. |
| Pyridoxine ($B_6$) | 0.4 mg. |
| Vitamin $B_{12}$ | 2.2 ug. |
| Vitamin C | 10.0 mg. |
| Vitamin D | 220 units |
| Vitamin E (acetate) | 5.3 mg. |
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Calorific Value 450.

CLINICAL TRIALS

Complan has been extensively tried in a wide variety of general and special units. Among these were a neurosurgical unit, a burns and plastic unit, a gastric surgery unit, a mental hospital and a geriatric clinic. All have reported favourably on the value of Complan's therapeutic effect—in some cases dramatic—its formula, and its wide acceptance and tolerance by patients. All welcomed Complan's valuable time saving features.

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*THE COMPREHENSIVE DIET*

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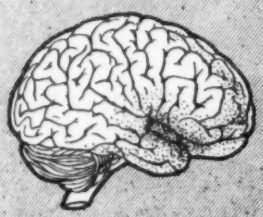
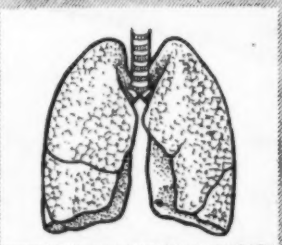
*1-lb. cartons and 14-lb. tins*

**This offer only applies to registered medical practitioners resident in the United Kingdom and Eire*

# *Selective amine for asthma . . .*

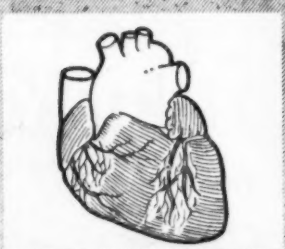
with only $\frac{1}{10}$ the central nervous system effect of ephedrine, Orthoxine avoids wakefulness and excitation, permits the asthmatic patient to rest and relax.





with twice the broncho-dilating effect of ephedrine, Orthoxine eases laboured respiration, provides more air for the asthmatic.

with only $\frac{1}{2000}$ the pressor effect of adrenaline, Orthoxine may be used even in elderly asthmatic patients and those with coexistent hypertension or cardiac disease.



## ORTHOXINE*
HYDROCHLORIDE

**DOSAGE:**
Adults — $\frac{1}{2}$ to 1 tablet repeated, if required, every three or four hours. Children — fractional doses according to age.

**SUPPLIED:**
Tablets of 100 mg. in bottles of 25 and 100.

* Regd. Trade Mark for the Upjohn brand of methoxyphenamine

Upjohn **Fine Pharmaceuticals since 1886**

**UPJOHN OF ENGLAND LTD., 4 Aldford Street, Park Lane, London, W.1, England**

**THERAPAS** is a modified form of P.A.S. that is more than an alternative.

P.A.S. was originally combined with isoniazid or streptomycin in order to delay the emergence of resistant strains of *M. tuberculosis*. **Therapas does this, too.** It is as effective as P.A.S. for this purpose. Similar in structure to P.A.S., it is converted to it in the body (1). P.A.S. combined with isoniazid or streptomycin is effective against *M. tuberculosis*. **Therapas is more so.** It is not merely an adjunct, but has a therapeutic activity *per se* (2). In combined therapy it is highly effective (3).

P.A.S., unfortunately, is poorly tolerated. **Therapas is not so,** and provides a welcome alternative. It has a slightly sweet, not unpleasant taste. Patients who dislike P.A.S. should be tried on Therapas.

1 *J. Pharm. Pharmacol.*, 1953, **5**, 849
2 *Schweiz.med.Wschr.*, 1955, **85**, 222
3 *Tubercle*, 1955, **36**, 209

**dosage** | **Therapas** may be administered in daily doses of 14G.

**availability** | Individual packets of 3.5 G in boxes of 100 packets.
1.0 G. cachets in containers of 100 and 500.
Bulk Powder in containers of 100 G. and 500 G.

S&N *Further information and prices from* SMITH & NEPHEW LIMITED, WELWYN GARDEN CITY, HERTS.

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**DAPTAZOLE** BRAND OF AMIPHENAZOLE
2:4-*Diamino-5-phenylthiazole hydrochloride*

*and Morphine*

*in the treatment of intractable pain*

A further clinical report on the use of "Daptazole" and Morphine published in the "British Medical Journal" of 21st January, 1956, confirms that the administration of "Daptazole" with large doses of Morphine results in the alleviation of the intractable pain of terminal carcinoma.

In this paper the results of the treatment in 127 cases are described and the main advantages of the combination summarized thus :—

"Administration of large amounts of morphine without respiratory depression, narcosis or depression of the cough reflex ; amiphenazole apparently prevents the onset of any marked tolerance to morphine, and possesses a central nervous stimulant action of the caffeine type ; and treated cases have a bright mental outlook under otherwise hopeless conditions."

*Further information and literature available to the medical profession on request.*

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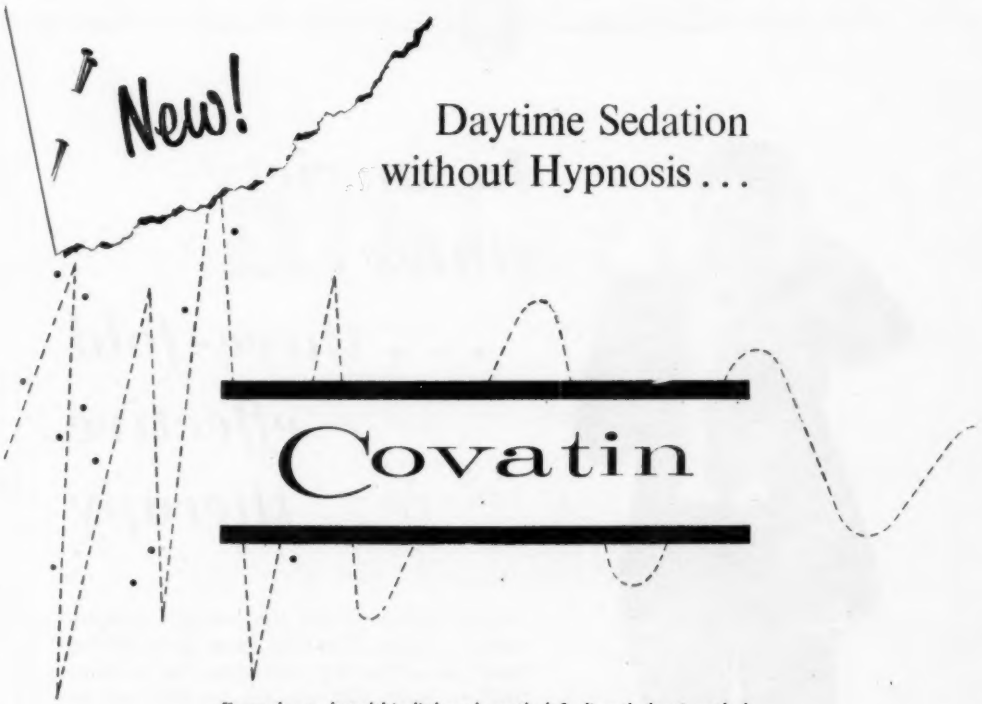


# Daytime Sedation without Hypnosis . . .

# Covatin

*Formula: p-butylthiodiphenyl-methyl-2-dimethylaminoethyl sulphide hydrochloride.*

Everyday in the waiting room there are patients who can benefit from Covatin, the new anti-anxiety drug. Covatin can be prescribed with confidence—clinical trials have proved that it promotes tranquillity and release from tension without causing sleep or dulling of alertness. It is particularly suited to the ambulant patient, has minimal side-effects and is not habit-forming.

## INDICATIONS

Anxiety and tension states, nervous disorders, depression and restlessness. Tension due to high blood-pressure, arteriosclerosis, or menopause, etc.

**Packaging**

Available as 50 mg. sugar-coated tablets in bottles of 50 and 500

**Dosage**

The therapeutic dosage is 1 tablet 5 times daily which should be taken with food, if possible.

Covatin

William R. Warner & Co. Ltd., Power Road, London, W.4.

# *In anxiety states . . . . . three-fold effective therapy*

Anxine Tablets provide the complete symptomatic treatment of anxiety states by improving mood and increasing confidence, by inducing gentle sedation and allaying anxiety, and by securing the optimal degree of muscular relaxation.

Although each of the three components of Anxine Tablets, dexamphetamine sulphate, cyclobarbitone and mephenesin, makes an important contribution to the amelioration of the symptoms of anxiety states, none is adequate alone. It is only when they are combined, in the form of Anxine Tablets, that maximum control of symptoms is achieved.

Anxine Tablets are indicated in the treatment of anxiety states, psychoneuroses and psychosomatic disorders. Anxine will produce rapid improvement in cases where mental or emotional tension is an important factor, in depression and neurasthenia, and in those patients suffering from the many ill-defined anxieties and fears which can so profoundly and adversely affect general health.

# ANXINE

*Each tablet contains :—*

| | |
|---|---|
| DEXAMPHETAMINE SULPHATE | 2·5 mg. |
| CYCLOBARBITONE | 35 mg. |
| MEPHENESIN | 120 mg. |

C56/160/161H

ALLEN & HANBURYS LTD · LONDON · E·2

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# Dibistin

*(0·05g. Antistin* and 0·025g. Pyribenzamine*)*

DOUBLE ANTIHISTAMINE THERAPY

ENSURES WIDER RANGE OF

CONTROL IN ALLERGIC DISORDERS

Bottles of 20, 100 and 500 tablets

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# Dibistin* Cream

*(1% Antistin and 1% Pyribenzamine)*

PARTICULARLY VALUABLE IN ALLERGIC SKIN DISORDERS

WHERE PRURITUS IS SEVERE

Tubes of 1 oz. Jars of 1 lb.

## C I B A

* *Trade Marks*

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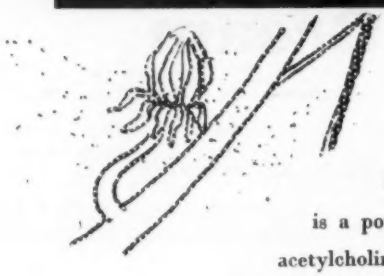
5/5

*In the treatment of hay fever . . .*

**Sandosten+Calcium–Sandoz**



(thenophenopiperidine tartrate)

**SANDOSTEN (thenophenopiperidine tartrate) is a powerful new antagonist of both histamine and acetylcholine and is highly effective in allergic disorders. The combination with CALCIUM—SANDOZ results in a potentiation of effects on cellular and capillary permeability and has been found to be effective in many cases which do not respond to either of the constituents alone.**

***Literature and samples are available on request.***

SANDOZ

**SANDOZ PRODUCTS LIMITED**

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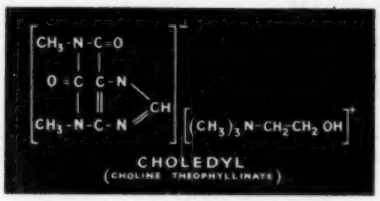


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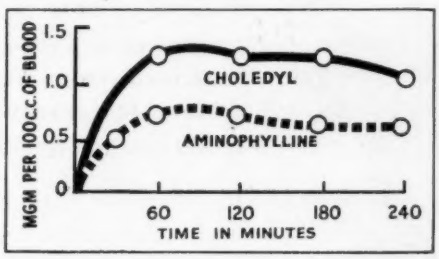


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1. *Mod. Med.* **(1954) 22: 22.**
2. *Canad. med. Ass. J.* **(1955) 72: 490.**
3. *Brit. med. J.* **(1955) 2: 381.**
4. *Union med. Canada* **(1955) 84: 672.**
5. *Arch. Derm. Syph.* **(1954) 70: 713.**

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# CHANGES IN MEDICAL EDUCATION *

JOHN R. ELLIS
M.B.E., M.A., M.D. Camb., F.R.C.P.
ASSISTANT PHYSICIAN TO THE LONDON HOSPITAL; SUB-DEAN OF THE LONDON HOSPITAL MEDICAL COLLEGE

(*concluded from p. 818*)

ALL too often attempts to improve medical education are concerned primarily with the curriculum; but the first essential, surely, is to define the aim. Having translated this into educational objectives, we can then decide what processes of learning the student must employ and what arrangement of his studies will enable him to employ the right process at the right time. This arrangement of the right process at the right time is not the curriculum: it is an educational plan. We know too little about the processes of learning to be sure of what the best plan is, but we know enough to outline the possibilities most likely to be successful.

Whatever plan is adopted is, however, no more than an ideal. For learning has to be aided by suitable techniques of instruction, and these in their turn require facilities that are bound to vary from school to school and can never be perfect. Only when the ideal educational plan is matched against the available facilities does the curriculum emerge. In the words of Dr. Hale Ham: "The curriculum is the course through which the student travels; it is a definition of limitations as well as opportunity." [6] For this reason recommendations confined to the curriculum are tackling medical education at the wrong end, and do little more than tinker with the time-table.

These then are the essential steps in building up the curriculum:

1. A statement of the *aim*—what we are trying to achieve in the period of undergraduate training.
2. A formulation of *educational objectives*—what kind of discipline we must teach to achieve it.
3. An analysis of the *processes of learning* which the student should employ to master this discipline, together with *techniques of instruction*.
4. The framing of an *educational plan* in which these processes and techniques are arranged at the most suitable stages of the student's development.
5. Implementation of this plan by translating the theoretical ideal into a feasible *curriculum*.

## The Aim

The aim of medical education was formerly defined as the preparation of the student for efficient general practice on qualification. Though for many years this aim has been obviously unattainable there has been reluctance to admit the fact. Even in 1944 the Good-enough Committee said that "the training must fit [students] to enter practice as general practitioners, and must also provide a sound basis upon which those who wish to become teachers and specialists can found the postgraduate training and experience they will require." [7] But since then the practice of medicine has greatly changed, and general practice has itself become clearly a specialised branch of it. Within the pattern of the National Health Service postgraduate training for this specialty has developed in the form of trainee assistantship, which most have come to accept as desirable if not essential.

It is now clear that the aim of medical education must be to give the student a foundation upon which he can later build a training for any branch of medicine. This can be achieved only if he is "groundedly learned" in (1) clinical observation, (2) method of thought, and (3) empirical knowledge, and if he learns how to learn for himself—which is the only basis for lasting efficiency and safety in practice.

Abandonment of a comprehensive training in favour of a basic education does not imply a mere reduction in the amount to be learnt. It means rather that, throughout medicine, a purely vocational training should give place to education in method of thought and clinical method. I do not believe this basic education would be less safe than the present training which is intended to be comprehensive but inevitably leaves out much that has to do with safety.

These considerations apply particularly to the general practitioner whose work is affected by advances in almost any part of medicine. The standard of medical care in this country depends upon the standard of general practice, and medical schools must regard it as their first duty to ensure the best possible undergraduate education and postgraduate training for their students who will take up general practice, irrespective of whether these are a large or small proportion of the total. The sure way to fail in this duty would be to base the undergraduate curriculum on what appears to be the present knowledge needed for general practice, and allow this to be acquired by purely vocational methods. But it is also essential that *every* student should see medicine as a whole—both in relation to the patient as an individual and in relation to medical care as it affects the community.

The suggestion, often made, that an education which aims to give students an understanding of scientific method is beyond the capacity of most of them is, in my opinion, quite invalid. No serious attempt to give it has been made in this country in the past thirty years, though many students have acquired it for themselves. "Scientific method" is not a laboratory process but the process of rational and critical thought. If we discover that the majority of medical students are indeed incapable of acquiring it, after a university education directed to that end, then we are not attracting suitable people into the profession; and, if we cannot find others more suitable, then there will be no alternative but to have two grades of doctors and alter the pattern of medical practice accordingly.

What we have to do, then, is to work out a foundation which will be a sound basis for all forms of medical practice. This foundation will continually change, for its content will always be selective; but it will not expand with the additions to medical knowledge. The strain of expansion will be transmitted to the postgraduate stage, where it can be relieved—as indeed is already happening—by specialisation within the specialties.

## Educational Objectives

The first objective is to cultivate in the student the power of *accurate observation*. The teaching of clinical observation has always held a high place in English medical education, and the technique of history-taking and of physical examination was a basic feature of the apprenticeship system. The clinical introductory course has, I believe, put instruction in this technique on a surer foundation.

The second objective is to develop the power of *logical thought*. This is necessary for the interpretation of what is observed—although we have to recognise that in clinical medicine it is often effective only when allied to experience.

Now there is considerable controversy on when and where the student learns or should learn this habit of logical thought. Some hold that it can be learnt only in preclinical or even premedical departments, since these deal with subjects which approximate more nearly

* The Goulstonian lectures for 1956 delivered before the Royal College of Physicians on Jan. 17 and 19.

6. Ham, T. H. *In* An experiment on Medical Education at Western Reserve University. New York, 1954; p. 13.
7. Report of Interdepartmental Committee on Medical Schools. H.M. Stationery Office, 1944; p. 173.

to exact sciences than does medicine. But there is still hope, I think, for the student who cannot think logically when he first enters the hospital wards; for many such eventually become surprisingly good doctors. In fact the scientific method of thought can be developed in the wards no less than in the laboratory. I would therefore plead that preclinical teachers should resist the temptation to press for the exact maintenance (or even extension) of their present share of the student's time and energies.

The third objective is the acquisition of *empirical knowledge*. Only as experience grows will the student develop clinical judgment.

### Processes of Learning and Techniques of Teaching

The student must learn to observe and reason and must acquire empirical knowledge. Observation he can learn only by long practice: this requires the use of the senses but no great mental effort. The ability to reason, on the other hand, can be gained only by using the mind. These are two entirely different processes of learning. Furthermore, it is not easy to combine the two, and it can be very confusing to try to do so, particularly at first. It follows that the arrangement of studies must facilitate learning by enabling the student, so far as possible, to use one process at a time. Each is assisted by different techniques of teaching, one transmitting information passively and the other activating thought. Thus the technique of teaching should always be relevant to the process of learning. This is, in fact, vital to the successful study of medicine which contains so much factual material; for if timing is wrong, or the wrong methods of teaching are used, the student has little alternative but to commit the facts to memory without understanding. This is more likely to happen in medicine than in other subjects because medicine includes so much that is not yet understood by anyone; and where knowledge is empirical it can be acquired only by memory, aided by experience. Too early exposure of the student to random experience is an incentive to practise memorisation and discourages his efforts to learn by understanding. Hence unlimited vocational experience and teaching should be restricted to the later stages of his education.

No-one, however, can think in a vacuum, and learning the method of rational thought requires some knowledge to start with. In the earliest stages of his education, therefore, the student must be given selected facts. It is essential that his mind should work upon orderly problems rather than chaos. He will be helped by systematising the material which he must learn, and in the early years, some integration of subjects is necessary for this reason. His experience of clinical problems—i.e., of patients—should, likewise be systematic at first. Recognition of this, and action to ensure it, is of the utmost importance. I do not believe this is fully understood.

Techniques of teaching require further experiment and research. To standardise them would certainly be a mistake: for they are much affected by environment and by the widely differing attitudes of students. Thus there is a great need for individual selection, by and for each student, of the most appropriate technique, and our present educational system fails to recognise or cater for this need. We have already at our disposal a considerable array of methods of proved value. What is wanted is a closer study of their efficacy and especially of their application to different stages of medical education. We have the didactic lecture, the clinical-theatre demonstration, traditional outpatient teaching, bedside teaching in the wards to a small group, the individual tutorial with or without patients, the discussion group, the clinical-pathological conference: in these, according to circumstances and the habits of the teacher, teaching predominates, or there is mutual interchange of ideas, or the student may take an active part. Then we have practical duties—the medical clerkship, the apprenticeship in the outpatient clinic. Then again, the student may learn for himself by extracting knowledge from textbooks and original papers, or by analysing case-records, or writing essays, or doing a piece of research. All these are learning techniques which need to be arranged more deliberately to serve a definite educational purpose at each stage of the educational plan. Only experiment with different methods, can enable us to arrive at the best possible arrangement.

### An Educational Plan

So little is known of the processes of learning and so little have the techniques of teaching been studied, that it is impossible to claim that, of the several plans on which medical education could be based, any particular one will prove to be the best. It is, however, undeniable that each must endeavour to ensure that medical education becomes a continuous process of learning, progressing by interlocking stages, each with its own educational objective and techniques of teaching relevant to it. In the light of experience I would favour a sequence of stages as follows:

The study of the normal.
The study of the causes and effects of variation from normal.
A short introductory course in clinical method.
A period of practice of clinical method—i.e., an orderly clinical clerkship.
A stage of consolidation—designed to combine the study of special pathology and the systematic study of clinical medicine.
A stage of more general experience mainly in the wards, by attachment to firms.
A stage of special outpatient teaching and of midwifery and pædiatrics.
A stage of practice under supervision, both in the outpatient department and outside hospital.
A stage of responsible practice under supervision—i.e., the provisional-registration appointments.

That is the skeleton which I now propose to clothe, though very sketchily. I must make it plain, however, that I am not trying to describe a curriculum: I am describing a plan which could become the curriculum in my own medical school (or any other) only if all the teachers required were available at the right time, and all the necessary facilities, both clinical and non-clinical, could be found. Even then, after the plan had been put into effect as a curriculum, it might well prove to be wrong as regards the duration of its stages, or their sequence, or the methods of teaching employed.

#### *Study of the Normal*

The study of normal would be an *introduction* to anatomy, physiology, biochemistry, and psychology—a systematised and, as far as possible integrated, introduction. Such interdepartmental teaching would not be difficult to achieve, and in Birmingham a course of this kind exists, though on a bigger scale. Perhaps it is integration at staff level, each teacher knowing what his colleagues are teaching, that is most important; and at this level there is usually much more integration in our present preclinical departments than in the clinical field.

To illustrate what I mean by introduction, I will take anatomy as an example. The whole body would *not* be dissected, and it would be useful to experiment with dissection of the fœtus. More detailed study of certain areas of the body would be left to later periods when it could be related to clinical work; for instance, the pelvis would be studied with midwifery. It might, however, prove sensible to study one system in detail at this early stage, and the central nervous system is the obvious choice—and rewarding because of the ease by which anatomy and physiology can be integrated in this system, and their application to clinical medicine demonstrated. In helping the student to understand the normal, the departments of medicine and surgery would take part.

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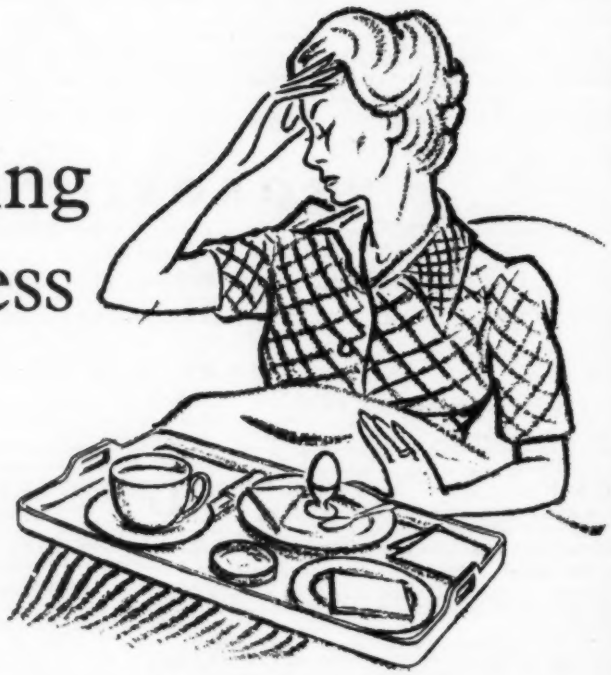

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Such an introduction must be very carefully planned. It does not aim at and must not result in a hazy picture of the whole—vague principles and half-facts. What is learnt must be understood, and be definite.

I would not at this stage include elaborate schemes to increase the student's awareness that man is a social animal, a member of a family and of a society. Such schemes are used in American schools, but I doubt whether they have real value at this stage. The difference in age of students and ways of life in the two countries have also to be remembered. Nevertheless, it is very important that the student should begin to consider the social aspect of medicine. To this end it would perhaps be worth setting him certain tasks—such as making a survey of local industry or health services.

This first stage would require, perhaps, one year divided into three terms as now—or two longer terms.

*Study of the Abnormal*

Study of the causes and effect of variation from normal would be based on the departments of bacteriology, morbid anatomy, psychiatry, and pharmacology. Clinical problems should be used as illustrations, and the natural link between infectious disease and bacteriology be exploited.

Again teaching would be integrated and experience systematised. Special pathology would not be included. I think one term would be enough.

*Introduction to Clinical Method*

Here I have in mind the present clinical introductory course in a modified form, lasting one term—i.e., slightly shorter than at present. Six weeks of applied anatomy and physiology would be devoted to learning the technique of clinical observation, the student being concerned only with the methods of obtaining evidence. In this he would be instructed, and his instructors would not attempt to teach him to interpret evidence, but only how to elicit it. In the next four weeks he would be introduced to interpretation by systematised demonstrations combining medicine and pathology. In this period, which would prepare him for work in the wards, he would require teaching, as opposed to instruction. He must be helped to bring his own reason to bear on the problems presented.

*Practice of Clinical Method*

After this instruction in clinical method, the student should have the opportunity to practise it under supervision—i.e., by an inpatient clerkship and dressership totalling six months. This is the place in the plan where a combined surgical and medical firm could be attempted. I am not certain that it is practicable, but it should be tried.

*Stage of Consolidation*

At the end of this six-month period of unsystematic exposure to clinical experience, during which much knowledge would have been gained, I would present the student with a "survey of human disease" combining the study of "special pathology," social pathology, and the systematic study of medicine.

*General Experience*

I would then send him into the wards for six months for further general experience. He should have responsibility for clinical-laboratory investigation, and his work should be closely integrated with that of the firm, so that he may learn the team-work of medicine by being a member of the team. Though I should prefer his medical firm to be as general as possible, I would let him join any surgical department that he wished. I would not worry him with lectures in this period, and I would like him to live in or near the hospital.

*Special Experience*

The student would now be in his fourth year at medical school—for holidays must be added to the times I have stated. In this year he should hold an appointment in midwifery and pædiatrics (with further teaching from the department of anatomy) and an appointment in the outpatient department. Together these would cover ten months. In this year and in the last there would be a free period of two months in which the student could be attached to two special departments of his choice, one in each year. He would attend the outpatient clinics of other departments.

*Practice under Supervision*

In this five-year plan there are now six months unallocated, and these should be for the student a stage of practice under supervision—three months in hospital and three months outside. The hospital appointment I envisage would be to a general medical outpatient clinic, served by students and supervised by teachers. I believe it would be of inestimable educational value and perfectly feasible. It would be complementary to the outside appointment, which would be in a university health centre, such as that in Edinburgh, but with more provision for student service. In this way the student would, under the supervision of his own school, learn something of practice in both fields of medicine—that in hospital and that outside—and of the links between the two. He would learn by participation and not by observing. This would be of incomparably greater value than any number of weeks spent "seeing and hearing" what a general practitioner does. By this means, too, the school could test his practical ability—a form of assessment we now lack.

*The Tutorial System*

At all stages teaching should be integrated by a tutorial system. The duty of the tutor is to inspire and guide the student to bring his own intelligence, previous education, industry, and character to bear on rewarding work. He need not necessarily be the student's philosopher and friend, but he must be his guide; and he can only guide him well if he really knows him.

The tutorial system is the solution to the problem of the large teaching staff and the groups of unknown students. It should enable us to re-create apprenticeship; but an apprenticeship suited to modern medicine—not concerned with passing on the "tricks of the trade" but contriving to make the student understand by his own efforts, and thus acquire both lasting knowledge and the ability to go on learning.

The tutor can guide the student in three main ways:

(1) In his reading, especially from original work.

(2) In his writing. Few students can learn to think if they do not regularly transmit their thoughts to paper.

(3) In his follow-up of selected patients. This is now essential, and the most effective method is for the tutor to select patients from those encountered in early clinical appointments.

The work of tutoring should not be arduous, for it is done more by thinking than by talking. It can be done well only by those who are sincerely interested in the education of students, who are able to give it the time required, and who have professional experience and ability.

*Methods of Assessment*

An educational plan, such as I have outlined, must include a system of assessment, and this must be integrated with the curriculum itself. Examinations are at present the most powerful of all the incentives determining the student's method of learning, and under present conditions their influence is unhealthy. Though they are indispensable as one form of assessment, they must be related at all stages to the educational plan. Furthermore, other forms of assessment, based on continuous observation of the student's progress, are more reliable and provide a better stimulus to proper habits of learning. But under our present system, no form of progressive assessment is possible.

### Premedical Education and Postgraduate Training

The plan I have outlined for undergraduate medical education depends on what goes before it and what comes after. I am certain that a balanced general education and a sound foundation in basic science can be achieved only by relaxation of the excessively high academic standard now demanded for entry into medical schools. No authority ought to require more than three subjects to be taken at advanced level, and one of these should be non-scientific.

At the other end of undergraduate education, postgraduate training must be arranged in continuity, according to the specialty which is to be practised. Provisional-registration house-appointments are a part of undergraduate education—a period of *responsible* practice under supervision—but they are a vital link with postgraduate training. As such they need careful examination and control so that they may provide the necessary experience.†

Postgraduate training after registration is as important for the general practitioner as for anyone else. Part of it must clearly be as a trainee assistant, but it should also include non-resident appointments in hospital departments—e.g., psychiatric, ophthalmic, and dermatological. The present tendency to give such appointments only to men who are going to specialise in these subjects is most unwise. There should also be appointments, probably of the "rotating" type, especially contrived for those who wish to take up general practice, and for young practitioners who have discovered a weakness in their experience, or a special interest which requires a firmer basis. It is unjustifiable to discredit future general practitioners by suggesting that they would be less willing than others to prepare themselves properly for their work. This branch has for centuries attracted many of the finest men in medicine, and it will continue to do so.

### Reasons for Choice of Plan

I have three reasons for preferring to any other the plan I have described.

Firstly, it forms a continuous process which is in the beginning entirely educational and then becomes progressively more vocational.

Secondly, it should surely be a guiding rule in any education that uniformity of the curriculum is avoided so far as possible: not only individual schools, but also individual students in a school, should be free to differ from each other. This plan makes possible the easy absorption into clinical schools of students from the universities of Oxford and Cambridge, and it enables students in any university to diverge from the main stream at the completion of the first stage in order to take an honours degree in medical science. The first stage means a considerable reduction in the content of anatomy and physiology as at present taught—although, of course, students would meet these subjects and teachers in later stages. I believe such a reduction is essential for many students; but a large number are capable of going further, and it is right for them, and imperative for future advance in medicine, that they should be able to do so. The present proportion of those who now take the B.SC. is too small.

But though we must allow "divergence" of students, any arrangement by which they were separated into two streams on arrival at medical school would be utterly wrong. Students should be free to diverge not only for an honours degree in the preclinical sciences, but in pathology, and (one would hope), some day in clinical science also.

† Many of these posts already differ greatly, for various reasons, from pre-war house-appointments; and it is unfortunate that the newly qualified are often given advice on their postgraduate training which fails to take this into account.

Thirdly, the plan pays due regard to the importance and the difficulty of acquiring a sound basis in clinical technique. When the student is first introduced to this he should be as free as possible to concentrate upon the method of learning which it requires, and should receive instruction from those expert in giving it.

The alternative system—inclusion of clinical technique from the start, so that the student learns how to examine each part of the body while he is learning its normal structure and function—has been in operation in Western Reserve University for nearly four years. I do not think it helps the student to acquire any better basis in clinical method and I think it may result in one not so good. Because it is capable of enlivening the study of anatomy and physiology, it is often suggested as a necessary reform; but this seems to me an insufficient reason for an arrangement that may weaken the foundation in clinical medicine. It is the less convincing because, where anatomy and physiology are taught well and under good conditions—as at Western Reserve—they are not dull.

I do not wish to disparage in any way the great service this university has done to medical education everywhere by its courageous and radical experiment—one that had to be made. Moreover the change in curriculum is not the only, and not the most important, experiment at Western Reserve. There is also an experiment in interdepartmental teaching, which is I think successful. There is a successful experiment in a tutorial system. And above all, there is an experiment in the ability of a medical school to conceive, adopt, and put into action an agreed educational plan. This last has been an unqualified success; and the form of the curriculum which this school develops is of little importance compared with the immense stimulus its staff have received in its development. The deficiencies of any curriculum can be remedied by the concerted efforts of an enlightened and interested teaching team, and Western Reserve has given us a lesson in medical education which we cannot afford to ignore.

### Educational Requirements

Any medical school in this country could take immediate steps to devise an educational plan, and it would then see what additional facilities it would need to put the plan into effect. The curriculum which it might eventually adopt would be the product of the available facilities as much as of the plan itself.

We can envisage some of the difficulties which would be encountered.

The provision of proper accommodation would almost seem axiomatic, but it is surprising how hard it can be to get space at appropriate times for all the various learning and teaching methods I have described. Clinical theatres, suitable outpatient consulting-rooms, rooms for tutorial and group discussions, facilities for laboratory investigation by both staff and students—all these are essential to education but they are seldom easily found. Since the patient is no longer indifferent to, and uninterested in, remarks at the bedside, there must also be rooms for ward teaching away from the patient.

A more obvious need is for clinicians to be able to give more time to teaching. I have mentioned the American system of geographically full-time consultants and the extraordinary difficulties the National Health Service has placed in the way of our having a similar system. But no adequate plan can be fulfilled unless this problem is tackled.

Finally under the heading of facilities for teaching we come to the question of clinical material. I have referred to the distortion and fragmentation of the student's clinical experience; but specialisation in teaching hospitals is not the only problem. There

are many others which require careful study and positive action if the selective clinical experience so essential to education is to be realised. At some hospitals population changes have adversely affected the clientele. The establishment of well-equipped and well-staffed regional-board hospitals has led to the diversion of acute emergencies, and of patients with common and easily treated ailments, away from the teaching hospitals. The number of children needing hospital treatment has fallen dramatically in all areas, and the numbers of the aged and chronic sick have increased. To maintain adequate turnover of patients at teaching hospitals the arrangements under which they can be discharged or transferred require further attention. In future the trend of hospital activities is likely to be towards increasing outpatient diagnosis and treatment and diminishing inpatient care—the latter being predominantly surgical. The possibility of much of the teaching hospital's work being diverted to health centres must be envisaged, together with an increase in domiciliary medical care. All these factors must be taken into account in working out the educational plan. Our greatest need is for a teaching hospital to be based on the community; and where the community health services lead, the teaching must to a large extent follow. Only if we have our educational objectives firmly established and our plan clearly conceived can we lay down and preserve the foundation which we need.

### Method of Reform

Obviously we cannot present a clear-cut alternative to our present system of medical education, in the shape of a well-defined, universally applicable curriculum which any and every medical school can adopt without difficulty.

I have said that any medical school in the country could at once take steps to work out its own curriculum on the basis of an educational plan. It should do so, and plan, as an integral part of it, the examinations and other forms of assessment required. It should define and choose the teaching team it would use. It should go further and devise means for the improvement in student-teacher contacts that is vital to the success of medical education. It should integrate the provisional-registration appointments with the rest of the curriculum. Lastly, it should set out to evaluate the results; for only by evaluation can adjustment be made, efficiency maintained, and progress secured.

All this can and must be done by the medical school. It cannot be done for it by any other body. And it can be done effectively only by democratic method—a representative planning committee. For even the best curriculum will become largely ineffectual unless the teachers not only picture it clearly in its entirety but are also aware of why it differs from the ideal plan. Democratic methods are slow. The planning committee of a medical school could not make progress by occasional meetings. Hard work and much time are required. But the task is urgent and necessary because medical education can no longer safely be a by-product of other medical work.

No school will devote the time and concerted effort that are required unless it is given a strong stimulus to do so. And the stimulus is unlikely to act without the knowledge that the responsibility for making, and continuing to make, improvements rests upon the school itself.

Today the existence of minimal requirements which, though "recommended" by the General Medical Council have come to be accepted as regulations, together with rigid examinations, stand as a bar to those who wish to make changes. To many they are a disincentive to question what change is required, and by the remainder they can be used as an excuse.

"At this juncture," I quote from a recent memorandum of the Royal College of Physicians, "no detailed guidance by the General Medical Council could do so much good as a relaxation of their 'control by prescription,' which would encourage—even oblige—teaching authorities to consider their curricula afresh."

The Medical Act of 1950 gave the General Medical Council for the first time the power to inspect medical schools. Thus a new way of meeting their statutory obligations—that of inspection of the medical school (its curriculum and examination system being seen as a whole)—is now open to the council.

Freedom to experiment, and greater freedom to make improvements, could therefore be given to universities and licensing bodies if the council were now to lay down the broad aim of medical education but place on those authorities the responsibility for planning a satisfactory curriculum and giving a satisfactory education. Since nearly half the medical schools of the country are within one university, it is clearly essential that London University should not only set up a planning committee at the highest level but also should transmit the same freedom and stimulus to its twelve medical schools.

This, I am certain, is the first step which has to be taken in the reform of medical education. When it has been taken, however, we shall—more even than now—come up against the hard reality that facilities for teaching urgently need to be improved and new ones provided. I am quite sure that no medical school can meet these needs by its own unaided efforts. If it were possible to do so, much more would already have been done.

As I have shown, there are three main requirements—accommodation, teachers, and clinical facilities. The first demands that the highest priority must be given by the teaching hospitals of the National Health Service to providing the physical conditions necessary for medical education. The second demands arrangements between the Ministry of Health and the universities by which some at least of the clinical teachers can devote more time to teaching and research in the teaching hospitals, so that their work, for the health service and in private practice, is centred on the place where they are teaching. (If long-term research is to continue and the needs of education be met, the universities must also increase the number of senior full-time teachers.) The third requirement—the most serious of all—demands action by the Ministry of Health to promote the formation, especially in London, of teaching hospital groups, with the simultaneous establishment of regional consultant hospital centres. The teaching-hospital group must be such that it can give patients care of the highest standard (which involves specialisation), can undertake research, and can admit patients with acute and common conditions from the community around it. Its size and cohesion must be such that the influence of the non-clinical departments of the university can permeate the whole.

These requirements can be met only if there is, in all regions, an authoritative medical advisory committee, which will secure collaboration between teaching and regional-board hospitals. The establishment of university health centres, with staff holding university appointments, is a new (but in my opinion essential) requirement, in which again the universities and the Ministry of Health must combine.

Freedom of medical schools to experiment is the first step in the reform of medical education, and provision of proper facilities is the second. It is not, however, the last. For medical education must never again be allowed to fall behind and lose touch with the advance of medicine and change in practice. Not only must it keep up to date: it must anticipate events, and not be the frustrated victim of their effects. Indeed, medical education must initiate trends. It alone can really ensure that the prevention of disease becomes increasingly the aim and

function of doctors—as it must, not least because medical care is now part of the economic life of the nation.

The third step in the reform of medical education is, therefore, to establish a means whereby it can itself be studied. Research is necessary in three things—in learning, in teaching, and in the pattern of medical practice. On the first two depends the future improvement of medical education. On the last depends the nature of the work students are eventually going to do. All three are the vital concern of the university medical schools. Their investigation requires a focus from which stimulation as well as correlation can come. A body capable of providing this focus must be found in the form of either a national council or an institute of medical education. Here is a supreme opportunity for collaboration between the Royal Colleges and the medical faculties of the universities—a collaboration at the educational level which would inevitably form a basis for wider coöperation in all fields of medical practice.

## EFFECT OF OXYGEN ON EXERCISE ABILITY IN CHRONIC RESPIRATORY INSUFFICIENCY

### USE OF PORTABLE APPARATUS

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THE effective control of acute respiratory infections in patients with chronic pulmonary disease has probably increased the number of such patients who progress to breathlessness on the slightest exertion. When such patients breathe oxygen, their arterial oxygen saturation is restored to normal (Comroe and Dripps 1950), their uptake of oxygen during exercise is increased (Valentin and Venrath 1952), the ventilation for standard exercise is reduced (Zorn 1940, Altschule 1954), and sometimes their ability to exercise is greatly improved. Therefore it seemed possible that portable oxygen equipment might have a use. Suitable apparatus has become available as a result of the development of equipment for supplying airmen and mountaineers with oxygen (Cotes 1954). We describe here an attempt to assess its usefulness in the symptomatic treatment of men with chronic respiratory failure.

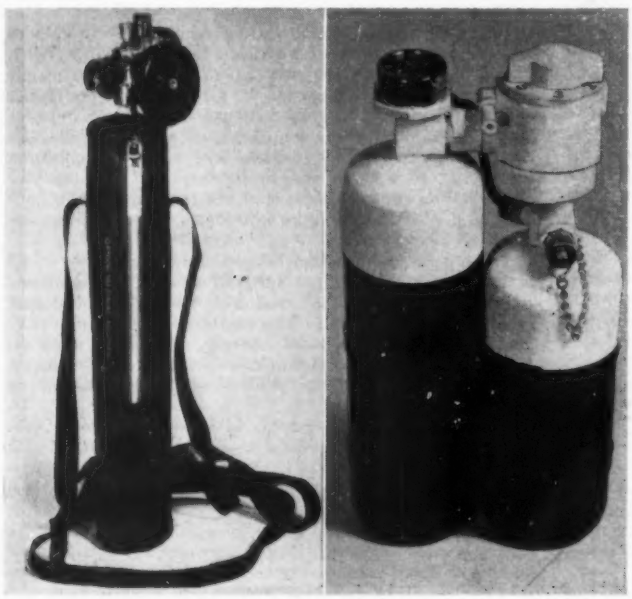

Fig. 1—Portable oxygen apparatus

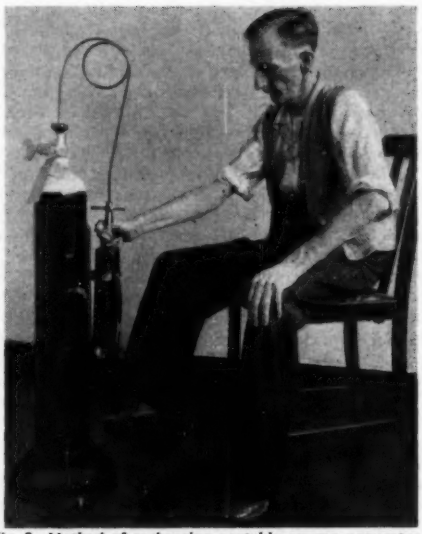

Fig. 2—Method of recharging portable oxygen apparatus.

#### Apparatus

One or more small light-weight steel cylinders containing 50–120 litres of oxygen at a pressure of 120 atmospheres are connected to a pressure gauge, a reducing valve, and a flow selector. The complete apparatus for 120 litres of oxygen weighs $2^1/_2$–$3^1/_2$ lb. More oxygen can be stored by using multiple cylinders, but the weight is not increased in proportion, since the cylinders share a common pressure regulator.

Two types of apparatus are illustrated (fig. 1). In one the oxygen flow is controlled by an on-off cock, and two flow settings are available. This apparatus can be carried comfortably on the shoulder. In the other, the squat two-cylinder type which goes into a pocket, the on-off cock and flow selector are combined into a single switch, which can be turned from "off" to any one of five preselected flows.

Charging has been done from a standard cylinder with a simple jig which can be operated by the patient (fig. 2). This is not entirely satisfactory, because the pressure in the charging cylinder will remain high enough to transfer a useful quantity of oxygen to the smaller cylinder for only a limited number of refills (fig. 3); however, since those who benefit from the portable apparatus often use standard cylinders at home, the half-charged ones can be used for this purpose. Sets are being developed with detachable cylinders which could be charged at a central depot and supplied to dispensaries by the dozen in manageable packages for distribution. Domiciliary recharging of portable sets would then be avoided and the difficulty of distributing unwieldy oxygen cylinders to private houses overcome in many cases.

### Method

The patients studied had either advanced pneumoconiosis or bronchitis and emphysema, and breathlessness prevented them from walking more than a few yards. Some were inpatients at the time of the investigation. The remainder were identified as having breathlessness grade 4 or 5 (Fletcher 1952) from the records of patients previously discharged from our ward, and they were invited to come in again for this investigation. Some of the patients were found to benefit from chemotherapy, antispasmodics, postural drainage, or diuretics before investigation. This reduced factors other than oxygen which might influence walking performance and improved the repeatability of the results. If oxygen proved to be beneficial under these conditions it would be likely to be more rather than less effective under the conditions in which these patients normally exist.

Exercise performance was assessed on a treadmill, the speed and slope of the belt being adjusted so that, breathing air, the man could walk for two minutes before stopping because of breathlessness. A constant time, rather than a constant work load, was selected because the degree of activity producing breathlessness varied from one patient to another. The period was chosen to reproduce conditions where a patient is repeatedly obliged to pause for breath on exertion. In addition, the effect of oxygen in increasing the duration of maximal exercise in healthy people is not apparent unless the exercise is at least of this duration (Christensen et al. 1934).

Once these conditions had been established, the walking time while the patient was breathing air and oxygen was determined, the gases (of composition unknown to the patient) being delivered through a humidifier to either a mask or a mouthpiece through a demand system operating at a low suction. Each walk was continued until the patient chose to "take a spell" because of breathlessness, or for five minutes, whichever was the shorter time. Five minutes was chosen because a man who can walk for this time without incapacitating breathlessness is likely to be able to continue longer, and his time of stopping may then be more influenced by fatigue or other factors.

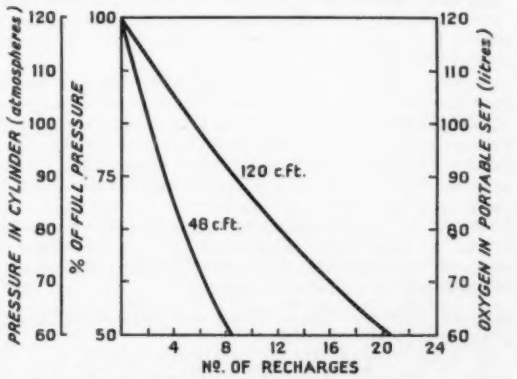


**Fig. 3—Relationship between number of recharges and pressure in charging cylinder.**

In some cases the arterial oxygen saturation was recorded with an ear oximeter previously calibrated against samples of arterial blood collected simultaneously. The ventilation was measured on a low-resistance gasmeter. The portable oxygen sets were tested by some of the patients in hospital, and in a few cases they were lent for trial at home. Visits were made to each patient's home at intervals of not longer than four weeks, in addition to weekly visits by their practitioners.

### Results

*Effect of Oxygen in Increasing Exercise Ability*

29 patients in clinical grades 4 or 5 were studied; 28 of them had been coalminers, and 18 had pneumoconiosis X-ray category 2 or above on the International Classification (1950) (Cochrane et al. 1951, Fletcher 1955). All these patients gave a history of chronic bronchitis and had emphysema and cor pulmonale. 17 of them were admitted for treatment of acute exacerbations of their

TABLE I—MATERIAL AND RESULTS

| Case no. | Age (yr.) | Diagnosis | Receiving oxygen at home | Walking ability (yd.) between attacks (patient's estimate) | Admitted for series | Requiring treatment | M.V.V. litres per min. | Exercise ability | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Treadmill setting | | Walking time (sec.) | |
| | | | | | | | | Speed (m.p.h.) | Slope (%) | Air | 100% oxygen |
| 1 | 69 | CB: E. .. .. .. | Yes | Nil | Yes | Yes | .. | 5/8 | 0 | 105 | >300 |
| 2 | 65 | CB: E. .. .. .. | .. | Nil | Yes | Yes | 16 | 1/2 | 0 | 105 | 130 |
| 3 | 55 | CB: Pnc (–/B.4/4) .. | .. | 25 | Yes | Yes | 22 | 1/2 | 0 | 100 | 105 |
| 4 | 64 | CB: Pnc (2/A.3/1) .. | .. | 40 | Yes | No | .. | 1 7/8 | 10 | 128 | 283 |
| 5 | 49 | CB: Pnc (–/D.4/5) .. | .. | 100 | No | Yes | .. | 1 1/2 | 5 | 105 | 285 |
| 6 | 64 | CB: Pnc (–/D.3/2) .. | Yes | 25 | Yes | No | 14 | 1 1/2 | 10 | 160 | 215 |
| 7 | 58 | CB: E: Pnc (–/C.4/4) .. | .. | Nil | No | Yes | 27 | 5/8 | 0 | 148 | >300 |
| 8 | 60 | CB: E: Pnc (2/A.2/–) .. | Yes | 12 | No | Yes | 32 | 1 1/2 | 10 | 114 | >300 |
| 9 | 62 | CB: Pnc (–/D.5/5) .. | .. | 3 | No | Yes | 33 | 1 | 10 | 132 | >300 |
| 10 | 36 | E.. .. .. .. | Yes | Nil | No | Yes | 10 | 5/8 | 0 | 80 | >300 |
| 11 | 55 | CB. .. .. .. | .. | 20 | Yes | Yes | 18 | 1/2 | 0 | 45 | 85 |
| 12 | 63 | CB: Pnc (–/D.4/3) .. | Yes | Nil | No | Yes | 10 | 5/8 | 0 | 157 | 294 |
| 13 | 56 | CB: Pnc (3/B.1) .. | Yes | 18 | Yes | Yes | 24 | 5/8 | 0 | 102 | >300 |
| 14 | 66 | CB: E. .. .. .. | Yes | About house | Yes | Yes | .. | 1 1/4 | 10 | 153 | 290 |
| 15 | 60 | CB: E: Pnc (–/C.4/4) .. | .. | 50 | Yes | No | .. | 1 | 7 | 107 | >300 |
| 16 | 61 | CB: E. .. .. .. | .. | 100 | No | Yes | .. | 1 1/2 | 10 | 105 | 250 |
| 17 | 70 | CB. .. .. .. | .. | 200 | Yes | Yes | 38 | 1/2 | 0 | 165 | 170 |
| 18 | 53 | CB: Pnc (–/D.5/4) .. | Yes | ? | No | Yes | 14 | 3/4 | 5 | 120 | 138 |
| 19 | 64 | CB. .. .. .. | .. | 20 | No | Yes | 20 | 1/2 | 0 | 90 | 110 |
| 20 | 71 | CB: Pnc (–/D.4/6) .. | Yes | Few | No | Yes | .. | 1/2 | 0 | 100 | 195 |
| 21 | 50 | CB: Pnc (–/C.5/4) .. | Yes | Few | No | Yes | 20 | 3/4 | 5 | 113 | 277 |
| 22 | 64 | CB: Pnc (3/B.5/2) .. | Yes | 20 | No | Yes | 16 | 1 1/2 | 10 | 90 | 260 |
| 23 | 63 | CB: Pnc (–/D.3/2) .. | Yes | 30 | No | Yes | 16 | 3/4 | 5 | 140 | 140 |
| 24 | 35 | CB: Pul. fib.: A. .. | Yes | 25 | No | Yes | 14 | 1 | 2 1/2 | 110 | >300 |
| 25 | 54 | CB. .. .. .. | Yes | 500 | Yes | Yes | 12 | 1 1/2 | 7 | 85 | 270 |
| 26 | 66 | CB. .. .. .. | Yes | Nil | No | Yes | .. | 1 1/2 | 10 | 116 | >300 |
| 27 | 66 | CB. .. .. .. | Yes | 1760 | Yes | Yes | 19 | 2 | 10 | 125 | 245* |
| 28 | 62 | CB: E. .. .. .. | Yes | Nil | No | Yes | 25 | 1/2 | 0 | 78 | 160 |
| 29 | 53 | CB: Pnc (3/D.5/3) .. | .. | 100 | No | Yes | 38 | 1 | 7 | 105 | >300 |

*30% oxygen.
M.V.V., maximum voluntary ventilation.
CB, chronic bronchitis.
E, advanced emphysema.
Pnc, pneumoconiosis (X-ray category in parentheses).
Pul. fib., pulmonary fibrosis.
A, infective asthma.

chest infection or of right heart-failure. The remaining 12 were admitted for the series, of whom 9 were found to benefit by active medical treatment before beginning graded exercise on the treadmill.

In 22 of the 29 patients the walking distance was at least doubled when they were breathing oxygen, compared with air (table I). In most cases this result was obtained with a mouthpiece or mask of the oxygen-reservoir type, but 2 men (cases 15 and 28) got little benefit until a nasal catheter (flow 6–8 litres a minute) was substituted. Of the remaining 7 patients exercise was limited in 2 (cases 2 and 23) by giddiness and in 1 (case 18) by pain in the chest. 2 (cases 6 and 19) showed only a small improvement on oxygen (34% and 22% respectively), and 2 (cases 3 and 17) showed no change.

*Minimal Effective Oxygen Flows and Influence of Design of Oxygen Mask*

In 6 patients an attempt was made to determine the minimal effective quantity of oxygen by varying the oxygen content of the inspired gas and the method of its administration (table II). Tests were so arranged as to allow for the effect of order of tests on exercise ability and for day-to-day variations.

The first patient to be studied in this way (case 21) did 6 walks on each of six days, breathing 20%, 25%, 30%, 50%, and 100% oxygen through a mouthpiece and using a portable oxygen set with flows of 2, 3, and 4 litres a minute delivered to an oronasal mask. The results (fig. 4) suggest that this patient paused for breath when his exercise ventilation exceeded 14 litres a minute, and that sensations arising as a result of changes in arterial oxygen saturation were not themselves directly responsible for his stopping. From the findings it appeared improbable that 25% oxygen in the inspired gas mixture would be sufficient for patients in this condition, and this mixture was not considered further.

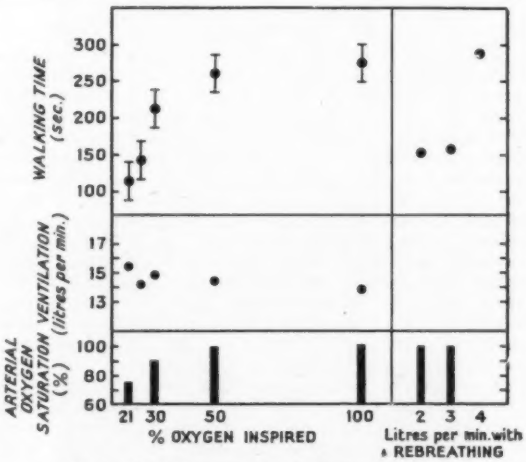


Fig. 4—Effect of oxygen on walking time (case 21).

When the lines drawn about a pair of points do not overlap the difference between the points can be said to be significant.

The relative efficacy of the seven remaining combinations was determined in triplicate in 2 further patients (cases 4 and 7). The results (fig. 5) are in agreement with

TABLE II—EFFECT OF OXYGEN ON WALKING TIME, EXERCISE VENTILATION, AND ARTERIAL OXYGEN SATURATION

| | | Case no. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 21 | 4 | 7 | 4 and 7 | 8 | 12 | 26 | 8, 12, and 26 |
| *Treadmill:* | | | | | | | | | |
| Speed (m.p.h.) | | 3/4 | 1 7/8 | 3/4 | .. | 1 1/2 | 3/4 | 1 1/2 | .. |
| Gradient (%) | | 5 | 10 | 0 | .. | 10 | 0 | 10 | .. |
| Oxygen | Index | | | | | | | | |
| % $O_2$ *in inspired air:* | | | | | | | | | |
| 21 | Walking time (sec.) | 113 | 128 | 148 | 138 | 114 | 157 | 116 | 129 |
| | Ex. vent. (litre/min.) | 15·3 | 23·3 | 24·1 | .. | 37·7 | 18·8 | 18·7 | .. |
| | % Art. $O_2$ satn. | 75 | .. | .. | .. | 75 | 85 | 63 | .. |
| 25 | Walking time (sec.) | 142 | .. | .. | .. | .. | .. | .. | .. |
| | Ex. vent. (litre/min.) | 14·1 | .. | .. | .. | .. | .. | .. | .. |
| | % Art. $O_2$ satn. | .. | .. | .. | .. | .. | .. | .. | .. |
| 30 | Walking time (sec.) | 212 | 193 | 303 | 248 | 249 | 298 | 264 | 270 |
| | Ex. vent. (litre/min.) | 14·7 | 25·0 | 21·3 | .. | 29·5 | 17·5 | 18·6 | .. |
| | % Art. $O_2$ satn. | 90 | .. | .. | .. | 98 | 94 | 92 | .. |
| 50 | Walking time (sec.) | 260 | 269 | 336 | 302 | 300 | 294 | 306 | 300 |
| | Ex. vent. (litre/min.) | 14·3 | 23·1 | 21·5 | .. | 25·8 | 16·0 | 16·9 | .. |
| | % Art. $O_2$ satn. | 99 | .. | .. | .. | 101 | 100 | 100 | .. |
| 100 | Walking time (sec.) | 277 | 283 | 313 | 298 | .. | .. | .. | .. |
| | Ex. vent. (litre/min.) | 13·8 | 23·2 | 20·6 | .. | .. | .. | .. | .. |
| | % Art. $O_2$ satn. | .. | .. | .. | .. | .. | .. | .. | .. |
| *"Mask" with rebreathing:* | | | | | | | | | |
| $O_2$ flow (litre/min.) | | | | | | | | | |
| 2 | Walking time (sec.) | 146 | 122 | 92 | 107 | .. | .. | .. | .. |
| | % Art. $O_2$ satn. | 100 | .. | .. | .. | .. | .. | .. | .. |
| 3 | Walking time (sec.) | 148 | 157 | 195 | 176 | 121 | 220 | 204 | 182 |
| | % Art. $O_2$ satn. | 99 | .. | .. | .. | 101 | 95 | 99 | .. |
| 4 | Walking time (sec.) | 307 | 200 | 218 | 209 | .. | .. | .. | .. |
| | % Art. $O_2$ satn. | .. | .. | .. | .. | .. | .. | .. | .. |
| *"Mask" without rebreathing:* | | | | | | | | | |
| $O_2$ flow (litre/min.) | | | | | | | | | |
| 3 | Walking time (sec.) | .. | .. | .. | .. | 164 | 290 | 237 | 230 |
| | % Art. $O_2$ satn. | .. | .. | .. | .. | 99 | 94 | 97 | .. |
| Minimal difference in walking time significant at 5% level | | 53 * | .. | .. | 59 | .. | .. | .. | 31·0 |

* Applies only to $O_2/N_2$ mixtures.

those of the first experiment in suggesting that the breathing of 30% oxygen instead of air significantly increases exercise performance. With higher oxygen concentrations there was a further increase; but, since the patients were then often able to walk until stopped at the end of five minutes (or five and a half minutes in case 7 *), the relative value of 50% and 100% oxygen could not be inferred directly. However, the exercise ventilations while breathing these two concentrations of oxygen were almost identical (mean 22·3 and 21·9 litres a minute), which suggested that the two gases were equally effective.

Increasing the oxygen flow from 2 to 4 litres a minute when an oxygen mask was used also increased exercise performance. However, the walking distance of the 1st patient, breathing 2 litres of oxygen a minute through a mask of the B.L.B. type, was apparently less, and that of the second 2 patients, breathing 3 litres of oxygen a minute through a mouthpiece adjusted to have the volume and flow characteristics of a mask, was signifi-

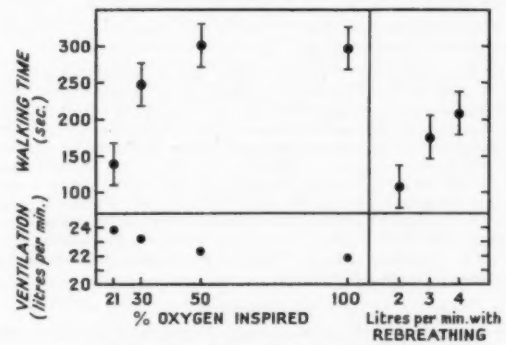


Fig. 5—Effect of oxygen on walking time (cases 4 and 7).

cantly less, than that achieved while breathing 30% oxygen. The calculated average inspired oxygen concentrations were similar, and oximeter readings indicated that the blood was as effectively oxygenated. We thought that the difference was caused by the respiratory embarrassment produced by the accumulation of carbon dioxide in the rebreathing bag. Support for this view was obtained by inserting a valve in the neck of the bag. This reduced the ventilation on average by 4 litres a minute in both healthy people and patients with chronic lung disease at rest and during exercise (Cotes and Merrick 1956).

The relative effectiveness of air, 30% and 50% oxygen in nitrogen, and of 3 litres a minute fed into a modified mouthpiece with and without rebreathing was assessed in 3 patients (cases 8, 12, and 26). The results have been combined in fig. 6. They confirm that these patients can walk further breathing 30% oxygen than breathing air. 30% oxygen was, however, significantly less effective than 50% oxygen in increasing exercise ability, and the exercise ventilation was in every case higher when the patient was breathing the lower oxygen concentration. 3 litres of oxygen a minute through a mask with a check valve in the neck of the bag enabled the patients to walk significantly further than under the same conditions but without the valve; however, even after this modification, oxygen delivered to a mask proved rather less effective than the corresponding oxygen mixture.

We conclude that the substitution of 30% oxygen for inspired air much increases exercise ability in some patients. With 50% oxygen there is a further increase

* The statistical analysis is somewhat impaired by this deviation from procedure, but the conclusions are unlikely to be invalidated.

TABLE III—ESTIMATED COST OF MAINTAINING THE ALVEOLAR OXYGEN CONCENTRATION AT 35% FOR A WEEK

| — | Oxygen flow (litres/min.) | Cost per week | | |
|---|---|---|---|---|
| | | Equipment (pence) | Oxygen (pence) | Total (£) |
| Nasal spectacles .. .. | 4·5 | 5·3 | 821 | 3·4 |
| Oxygen mask .. .. | 2·0 | 6·3 | 365 | 1·5 |
| Disposable mask .. | 2·5 | 15·0 | 456 | 2·0 |
| Oxygen tent (hired) .. | 6·0 * | 1260·0 | 1095 | 9·8 |
| Domiciliary set (N.H.S.) | 2·5 | 126·0 | 1692 | 7·6 |

* Including an allowance for flushing.

but small in proportion to the increased amount of oxygen required. The effect of 30% oxygen can be reproduced by 4 litres of oxygen a minute delivered to a well-fitting oxygen mask with an oxygen reservoir bag and check valve to prevent rebreathing. This combination is the optimum for a portable oxygen supply for use in these circumstances.

*Portable-oxygen Therapy*

Exercise ability was much increased by breathing oxygen in 22 of the 29 patients in the series, and we think that, if temperament and other factors are taken into account, about half might benefit by portable-oxygen therapy. 4 patients (cases 8, 12, 21, and 26) have been fitted with oxygen masks incorporating a non-return valve to prevent rebreathing and have been provided with oxygen sets adjusted to deliver 4 litres of oxygen a minute. In each case a daily charge of oxygen has enabled a man, previously virtually immobilised by breathlessness, to move about the house and to walk out to sit in the garden. No adverse effects have so far been observed. These preliminary trials are continuing. An extended trial of portable oxygen equipment might be worth while when the improved equipment with detachable oxygen bottles becomes available.

*Domiciliary Oxygen Therapy*

More oxygen is supplied for home use than is probably generally realised. During 1955 a third of all chemists in Wales and Monmouthshire (population 2,600,000) were asked for oxygen or oxygen equipment, which was supplied on prescription to 860 patients. The consumption in April that year amounted to 750 of the 48 c.ft. cylinders. On April 30, 134 patients were using oxygen, of whom 83 had done so for more than three months and 10 for more than three years.

The quantity of oxygen used at home is small in comparison with that supplied to hospitals; however, litre for litre, domiciliary oxygen is at present four times as expensive (table III) and contributes appreciably towards the total oxygen cost. The expense of distributing domiciliary oxygen might be reduced by the substi-

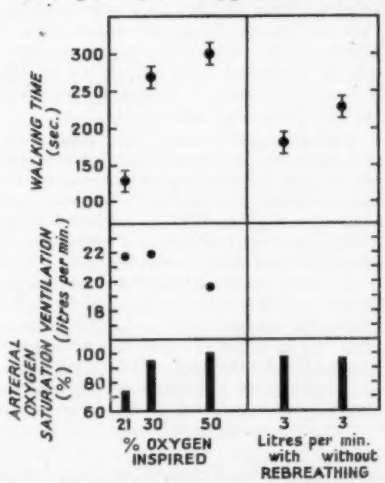


Fig. 6—Effect of oxygen on walking time (cases 8, 12, and 26).

tution of cartons of small cylinders of the type used in portable equipment (weight 25 lb. per 48 c.ft. capacity) for the 48 c.ft. cylinders (weight 35–45 lb.) in present use. This change would also greatly ease the burden, which in our experience usually falls on the dispenser, of transporting oxygen to the patient's home and of carrying it upstairs to the bedroom.

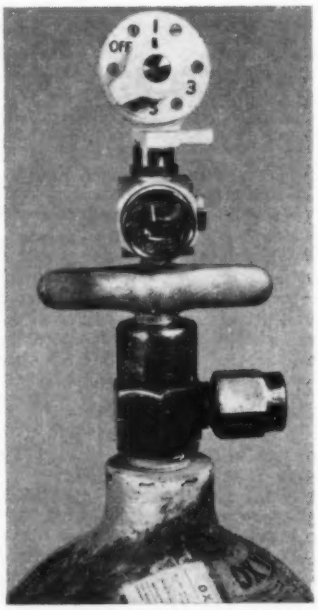

Fig. 7—Oxygen regulator and flow selector adapted to fit standard oxygen cylinder.

To make the best use of portable oxygen and any domiciliary supply, an accurate leak-free pre-set flow selector is essential (fig. 7). The regulator developed for the portable equipment could be used on the standard cylinders and would save much oxygen. For maximal economy a well-fitting mask of the oxygen-reservoir type, with a check valve to prevent rebreathing, should also be used.

### Discussion

Our results show that, in a fair proportion of patients with chronic respiratory infection and severe respiratory disability, a further useful increase of exercise ability above that produced by intensive chemotherapy can be produced by breathing 30% oxygen.

It is our impression that such patients gain in exercise ability by breathing oxygen only if they are prepared to exercise to the point of some visible respiratory distress while breathing air. Some patients do so constantly; and others may wish to do so after treatment and rehabilitation; but some patients apparently cannot exert themselves so far. This variation is a manifestation of the patients' attitude to their disease and need not represent any difference in the underlying pathology, though this cannot be excluded. It is likely to be the major factor affecting the success or failure of portable-oxygen therapy in the individual case.

The increased exercise ability when the patient is breathing oxygen is probably due to a reduction towards the normal levels of the ventilatory requirements for exercise, as a result of the relief of anoxia. The reduction of ventilation causes a rise of the arterial carbon-dioxide tension (Haldane and Priestley 1935), which could lead to loss of consciousness (Donald and Davidson 1954). This complication has not been observed, and the risk can be reduced by restricting activity to essential tasks and by using minimal effective oxygen flows. Addiction to oxygen is a more serious risk, but it is one to which many of these patients are already exposed when using domiciliary oxygen and is probably not increased by making the equipment more portable; but it is a reason for limiting the use of oxygen to those who get real benefit from it.

Portable oxygen should be regarded as an integral part of domiciliary oxygen therapy. A review of existing equipment and the cost of supplies is needed. This might be expected to lead to much improved equipment and to the more effective use of oxygen, with an ultimate saving of cost to the National Health Service. Demand is likely to increase because an ageing population is likely to contain more people with chronic respiratory failure.

### Summary

Breathing oxygen usefully increased exercise ability in most of 29 patients selected as having severe chronic respiratory insufficiency. The effect was measured by the increased time they could walk on a treadmill.

From detailed studies of 6 patients it is concluded that 30% oxygen in the inspired gas is not greatly inferior to 50% and 100% oxygen in increasing exercise ability. An effect similar to 30% can be obtained from an oxygen flow of 4 litres a minute delivered to a well-fitting oxygen mask, with an oxygen reservoir bag protected by a check valve to prevent rebreathing. Exercise ability is significantly impaired by the omission of this valve.

Portable oxygen equipment is described which has been used successfully by 4 patients in their homes.

The need for improved portable and domiciliary oxygen equipment is emphasised.

It is a pleasure to acknowledge our indebtedness to Mr F. Purse, of the Prescription Pricing Bureau, Wales, for information on the supply of domiciliary oxygen equipment to dispensaries; to our colleagues, in particular Mr. P. D. Oldham, for help with the design of the experiments and with the statistical analysis of the data; to Dr. J. A. L. Gorringe, Dr. C. B. McKerrow, and Dr. J. B. West for the clinical care of our patients; and to Mr. A. J. Merrick, Mr. F. Meade, and Mr. R. T. Harris for technical and photographic assistance. Messrs. Walter Kidde & Co. Ltd., Northolt, Middlesex, and Messrs. Normalair Ltd., Yeovil, Somerset, provided the portable oxygen equipment.

#### REFERENCES

Altschule, M. D. (1954) Physiology in Diseases of the Heart and Lungs. Harvard.
Christensen, E. H., Krogh, A., Lindhard, J. (1934) *Quart. Bull. Hlth Org. L.o.N.* **3**, 388.
Cochrane, A. L., Davies, I., Fletcher, C. M. (1951) *Brit. J. industr Med.* **8**, 244.
Comroe, J. H. jun., Dripps, R. D. (1950) The Physiological Basis for Oxygen Therapy. Springfield, Ill.
Cotes, J. E. (1954) *Proc. roy. Soc.* B. **143**, 32.
— Merrick, A. J. (1956) *Brit. med. J.* **i**, 269.
Donald, K. W., Davidson, W. M. (1954) *J. appl. Physiol.* **7**, 31.
Fletcher, C. M. (1952) *Proc. R. Soc. Med.* **45**, 577.
— (1955) *Arch. industr. Hlth*, **11**, 17.
Haldane, J. S., Priestley, J. G. (1935) Respiration. Oxford.
Valentin, H., Venrath, M. (1952) *Beitr. Klin. Tuberk.* **107**, 35.
Zorn, O. (1940) *Ibid*, **94**, 544.

## BRONCHIAL CARCINOMA
## EFFECT OF RADIOTHERAPY ON SURVIVAL

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THERE is no indubitable evidence that radiotherapy prolongs the life of patients with lung cancer.

No clinical trial has been recorded in which patients were allocated at random to treated and untreated groups; and, since it is generally agreed that the treatment can improve or relieve certain distressing symptoms, it is doubtful whether such a trial would be justified. But with a large number of case-records and a knowledge of factors influencing survival it might be possible to construct groups sufficiently comparable to demonstrate differences in survival, if they are large enough to be practically important.

In this report the survival of 207 patients treated by radiotherapy is compared with that of 248 who were not so treated.

### Selection of Patients

Since 1951 records have been kept by the joint consultative clinic of the Brompton Hospital and the Royal Marsden Hospital of all patients with a bronchial carcinoma attending the two hospitals, whether or not they were treated. The initial selection of patients for radiotherapy, once surgical treatment had been excluded, was made by the physicians and surgeons of the hospitals. The selected patients were, with few exceptions, referred to the clinic, where the final decision on treatment was made. Selection has therefore not been according to a single uniform policy. Radiotherapy was usually advised to alleviate symptoms rather than to prolong life. But many factors that cannot satisfactorily be recorded influence a decision on treatment; and some patients with few or no symptoms were treated, whereas others with symptoms were not. Although it is inevitable that the group of treated patients should contain fewer in a less advanced stage of the disease than the untreated group, the methods of selection at these hospitals have perhaps tended to reduce the difference between the groups.

Three-quarters of the treated patients in the present investigation were treated at the Royal Marsden Hospital. The length of treatment and the dose of irradiation were largely governed by the patient's general condition and the symptomatic response. It seems likely that in the whole series the more robust tended to get larger doses of irradiation.

### Construction of Groups

The patients were selected from the 996 with bronchial carcinoma seen at the two hospitals in 1951–53; 221 of these were treated surgically, 321 were treated by radiotherapy, and 454 received no treatment likely materially to prolong life.

*Exclusions*

Patients with extrathoracic metastases at the time of diagnosis live for shorter periods than those without. Since so few such patients were treated by radiotherapy, their inclusion in the series would, of course, heavily prejudice the untreated groups. All with evidence of extrathoracic metastases at the time their treatment was decided have therefore been excluded. A patient must live for at least a month after first attending hospital if he is to receive a dose of radiotherapy sufficiently large materially to alter the course of the disease; for it is unlikely that the necessary investigations and arrangements can be made and the treatment given in a shorter time than this. To include among the untreated patients those who died within a month would bias the group; and these also have been excluded.

The groups for comparison were therefore taken from those patients without evidence of extrathoracic metastases when the treatment was decided, who lived for at least a month after first attending hospital, and in whom the time of the first appearance of symptoms was known. 213 patients treated by radiotherapy with an estimated dose delivered at the site of the primary tumour greater than 1000r fulfilled these requirements, as did 251 who received neither surgical treatment nor radiotherapy.

The after-history of 9 of these 464 is unknown. The remaining 455 were followed for two years from first attending hospital or until earlier death. To simplify the comparisons the few incompletely followed up have been excluded. This is thought to be justified because including them as dead at the time they were last heard of does in fact alter the survival experience of the groups very little; and the conclusions drawn from the comparisons are unchanged. There are therefore 207 treated by radiotherapy to be compared with 248 untreated.

TABLE I—THE TREATED AND UNTREATED GROUPS

| — | Number of patients | | |
|---|---|---|---|
| | No mediastinal metastases | Mediastinal metastases | Total |
| 1000–3900r .. | 49 | 65 | 114 |
| Untreated .. | 148 | 100 | 248 |
| 4000r or more .. | 54 | 39 | 93 |
| Untreated * .. | 126 | 89 | 215 |

* 33 of the 248 untreated patients died within 2 months of first attending hospital; they have been excluded from the untreated group for comparison with treated patients having 4000r or more.

To receive a tumour dose of more than 4000r the patients must be under treatment for about four to six weeks. No patient who dies within two months of coming to hospital is likely, therefore, to have been able to receive such a dose of irradiation. 33 of the 248 untreated patients died within this period, 215 living for more than two months. The survival of the patients who received 4000r or more has therefore been compared with the survival of these 215.

*Subgroups*

The 207 patients in the radiotherapy group have been divided into two subgroups: 114 patients who received an estimated tumour dose of 1000–3900r, and 93 patients who received a dose of 4000r or more.

One group of patients might live longer than another because it contains fewer with regional node metastases and not because the treatment is different. The groups were therefore further divided into those with and those without evidence of mediastinal metastases at the time of diagnosis.

There are therefore four pairs of treated and untreated groups to be compared (table I).

### Comparison of Groups

The groups were compared as regards the known distribution of histological types, the ages of the patients, and the durations of illness before diagnosis.

Only small and clearly unimportant differences were found in the distribution of histological types of tumour and ages of the patients between the groups receiving 1000–3900r and the corresponding untreated groups. The survival of a group containing a large proportion of patients with a duration of symptoms of about six months before diagnosis is likely to be shorter than that of a group with fewer such patients (Bignall 1955).

There were only slight and unimportant differences in the distribution of the durations of symptoms; and the proportions with symptoms for three to eleven months were almost identical in treated and untreated. In the untreated group there were, however, more in whom the diagnosis might be doubted. For instance, there was neither histological, thoracotomy, or necropsy confirmation of cancer nor knowledge of metastases throughout the illness in 66 (45%) of the untreated, compared with only 11 (22%) of the corresponding radiotherapy groups. 2 of the 66 and 1 of the 11 patients were still alive when last heard of.

A comparison of those treated with 4000r or more with the corresponding untreated groups also shows only minor differences. There was neither histological, thoracotomy, or necropsy confirmation nor knowledge of metastases in 54 (43%) of the untreated and 11 (20%) of the treated. 2 of the 54 and 3 of the 11 patients were still alive when last heard of.

In these selected groups there were therefore no important differences in the distribution of factors known to influence survival. In spite of this the untreated

TABLE II—DURATION OF SURVIVAL AFTER FIRST ATTENDING THE HOSPITALS

| — | Total no. | Proportion (%) surviving after (yr.) | | Proportion (%) surviving (mos.) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 0–5 | 6–11 | 12–17 | 18–23 | 24 + |
| *No mediastinal metastases:* | | | | | | | | |
| 1000–3900r .. | 49 | 30 | 6 | 37 | 33 | 12 | 12 | 6 |
| Untreated .. | 148 | 20 | 5 | 54 | 25 | 11 | 4 | 5 |
| 4000r or more | 54 | 35 | 15 | 22 | 43 | 15 | 5 | 15 |
| Untreated .. | 126 | 24 | 6 | 47 | 29 | 13 | 5 | 6 |
| *Mediastinal metastases:* | | | | | | | | |
| 1000–3900r .. | 65 | 19 | 3 | 46 | 35 | 11 | 5 | 3 |
| Untreated .. | 100 | 25 | 8 | 45 | 30 | 12 | 5 | 8 |
| 4000r or more | 39 | 38 | 13 | 20 | 41 | 15 | 10 | 13 |
| Untreated .. | 89 | 28 | 9 | 38 | 34 | 14 | 5 | 9 |

groups probably contained more patients in an advanced stage of cancer who, although having no demonstrable distant metastases, were yet considered too ill to withstand radiotherapy. Their number is unknown. But there are known to be differences between the groups in the proportions considered to be in too poor a condition to withstand pulmonary resection. For instance, in those without evidence of mediastinal metastases the proportions were 27% in the untreated and 11% in the treated patients. It seems fair, however, to conclude that the groups are not so grossly biased that a large difference in survival could not reasonably be attributed to treatment rather than to selection for treatment.

## Survival

The experience of each radiotherapy group was compared with that of its corresponding untreated group. The duration of life after first attending hospital was preferred to the total duration of illness. The interval between attendance and death can be accurately recorded; but, since the length of illness before diagnosis is almost always approximate, the total duration of illness is inaccurate. Furthermore, the duration from first attending hospital is a more clinically useful expression of the experience of the patients. But the comparison is only valid if there are no large differences between groups in the estimated duration of illness before attendance. The differences are in fact small. Moreover, the effect of the previous duration of illness has been eliminated as far as possible by comparing, in addition, the experience of patients with histories of similar duration.

### *One-year and Two-year Survival-rates*

In the group treated with less than 4000r the differences in the proportions surviving two years from first attendance were insignificant (table II). Among those without metastases 30% of the treated lived more than a year, compared with 20% of the untreated. The difference of 10%, with a standard error (S.E.) of 7%, is small. So also is the difference of 6% between the treated and untreated patients with metastases. The differences at one and two years are only slightly greater in the groups treated with 4000r or more. In those without metastases 35% of the treated and 24% of the untreated lived for a year or more—a difference of 11% (S.E. 8%). There was still a small difference of 9% (S.E. 8%) in those surviving two years. In those with metastases the differences are of the same order—10% (S.E. 9%) after one year and 4% after two years.

### *Pattern of Survival*

The pattern of survival, judged by the proportions living for successive six-month periods, was not greatly different in the treated and untreated patients (table II). In the untreated patients the largest proportion of deaths took place in the first six months, and the pattern of survival of those treated by less than 4000r is similar. In the group with mediastinal metastases the patterns are, in fact, almost identical. But fewer of those without metastases died within six months of first attendance—37% compared with 54%—a difference of 17% (S.E. 8%).

The differences in the group treated with 4000r or more are larger; and the biggest number of deaths among treated patients took place in the period between six and eleven months after first attendance. The differences in the proportions dying within six months were 25% (S.E. 7%) in those without metastases and 18% (S.E. 8%) in those with them.

The probabilities that the observed differences in the patterns of survival were due to random-sampling variations are more than 1 in 20, except in the case of patients without metastases treated with 4000r or more, where the probability is less than 1 in 100.

### *Previous Duration of Symptoms*

Survival after first attending hospital is affected by the duration of previous illness.

Groups of treated and untreated patients with approximately similar durations of symptoms were therefore compared. 35 of the 54 patients without metastases who received 4000r or more had had symptoms for less than six months; 27 (77%) lived six months and 11 (31%) a year, compared with 51% and 21% of the corresponding untreated group. In those with symptoms for more than six months there were similar differences, 79% of the treated living six months and 42% a year, compared with 56% and 28% of the untreated. Further subdivision according to length of symptoms produces groups that are too small for valid comparison; but the trend throughout is the same: whatever the length of symptoms the treated patients lived a little longer than the untreated. Thus 16 had been ill for three to five months; 13 survived six months and 6 a year. In the corresponding untreated group of 31 only 13 lived for six months and 4 for a year. In both those with metastases and those without, the differences between treated and untreated patients were smallest in the groups with the shortest previous illness. Indeed, in the case of patients with mediastinal metastases treated with small doses, the corresponding untreated group with symptoms for less than three months fared a little better than the treated group; 55% of the 36 untreated survived six months and 22% a year, compared with 48% and 17% of the 29 treated.

## Discussion

There are several reports of comparisons between the course of bronchial carcinoma in untreated patients and patients treated by radiotherapy; but in none has an attempt been made to study the comparability of the two series or to balance them by selection.

Most workers have compared the mean durations of life from the first symptom (Chandler and Potter 1927, Maxwell and Nicholson 1930, Vinson 1936, Steiner 1940, Tenzel 1941, Shorvon 1947, Harnett 1952). Longer mean duration has been reported in the treated patients, the differences ranging from $1^1/_2$ months (Steiner 1940) to nine months (Shorvon 1947). LaDue (1955) compared 470 treated patients with 133 untreated and concluded that irradiation led to a 5–15% increase in the survival-rate from the start of symptoms; half of the 470 given radiotherapy died during the first year, compared with 68% of the untreated. Leddy and Moersch (1940), Farberov and Baslow (1941), and Hilton (1945) reported that treated patients lived longer after diagnosis. So did Widmann (1944), but he rightly commented that it is

futile to make direct comparisons. Bloch and Bogardus (1940), on the other hand, treated 88 patients and found that duration of life from the first symptom was the same as in untreated patients; and Graham et al. (1935) stated that radiotherapy does not prolong life.

Craver (1940) recorded longer survival in those treated with the larger dose of irradiation. Brown (1952) found that 6 of 39 patients treated with 2000–3000r survived nine months, compared with 39 of 92 treated with 4000–5000r, and concluded that the survival-rate was definitely improved when doses of over 4000r were given. But Adelman (1952), who also noted increasing mean survival with increasing dose of irradiation, pointed out that patients receiving high doses are generally in a less advanced stage of cancer and would be expected to live longer without any treatment.

There is, it appears, no conclusive evidence that radiotherapy prolongs life or that large doses have a greater effect on survival than small doses.

The differences observed in the present investigation may have been due to chance sampling variations, differences in the composition of the groups, or the effect of radiotherapy. The treated and untreated groups were undoubtedly dissimilar. In spite of the attempt to select groups as near as possible alike, the untreated groups probably contained more patients in an advanced stage of the disease. For instance, in the case of those without metastases who received 4000r or more, only 6 (11%) had been judged to be in too poor general condition to withstand lung resection; but in the untreated group with which they were compared there were 34 (27%) such patients. However, if these more ill patients are excluded from both groups, the differences in survival are little changed; 38% of the 48 remaining in the treated group lived a year and 17% two years, compared with 27% and 6% of the 92 untreated.

The differences between treated and untreated might have been partly due to there being more patients in the untreated group likely to die in a short time. There would then be more untreated patients dying within six months of first attending hospital. This was indeed found. But there was a large excess; and it is doubtful whether it was entirely due to selection. For instance, in the group in which the difference was greatest—those without metastases treated with 4000r or more—as much as 30% of the 126 untreated patients must be assumed to have been too advanced for inclusion in the group to bring the pattern of survival close to that of the treated patients. On the other hand, such an explanation of the differences is certainly possible; because, if 38 (30%) are excluded from the number who died in the first six months, the proportions of the remaining 88 dying in the four six-month periods up to two years would be 24%, 47%, 19%, and 7%—proportions remarkably similar to those observed in the corresponding treated patients: 22%, 43%, 15%, and 4%.

The observed differences between treated and untreated groups could have been due entirely to the dissimilarity of the groups and random sampling variations, without radiotherapy having had any effect, beneficial or deleterious; but it seems improbable. The differences between treated and untreated in the patterns of survival are greater in those without mediastinal metastases than in those with them. In the groups treated with small doses of irradiation the patterns were indeed almost identical in those with metastases, although there were noticeable differences in those without. But there seems to be no reason to believe that more patients with advanced disease were selected for treatment from those with metastases than from those without. Selection probably operated to about the same extent in both groups. Some of the differences observed might therefore have been due to the treatment; and it seems reasonable to suppose that, if the course of the disease is changed at all, it will be altered least in patients who already have intrathoracic metastases.

There seems to be suggestive but by no means conclusive evidence that radiotherapy prolonged the life of some patients in this series; but, even if life were prolonged, it is highly unlikely that the larger doses of radiotherapy given to the most favourable patients—those without manifest mediastinal metastases—caused an increase of as much as 10% in the proportion surviving a year after first attending hospital or 5% in those living for two years.

This report is not concerned with whether a probable increase of the order suggested justifies greater or less use of radiotherapy in bronchial carcinoma, nor with the effects of treatment on the patient's symptoms or his peace of mind.

## Summary

The course of the disease has been studied in 455 patients with bronchial carcinoma. 207 were treated by radiotherapy, 114 receiving an estimated tumour dose of 1000–3900r and 93 4000r or more. Their survival is compared with that of 248 who received no treatment likely to prolong life.

The groups were selected to be as far as possible alike in the factors known to influence survival. No patient was known to have extrathoracic metastases when the decision on treatment was made.

The greatest difference between treated and untreated in the duration of life from first attending hospital was found in those without mediastinal metastases treated with 4000r or more: 35% lived a year and 15% two years, compared with 24% and 6% of the untreated.

In the patients with mediastinal metastases the differences were less; and the pattern of survival of those treated with 1000–3900r was almost identical with that of the corresponding untreated group.

There is suggestive evidence that the differences were not due entirely to selection and random-sampling variations but were contributed to by the radiotherapy.

In this series of patients it is unlikely that radiotherapy caused an increase of as much as 10% in the proportion surviving a year after diagnosis or 5% in those living two years, even in the most favourable cases treated with higher doses.

I am indebted to the medical committees of the Brompton Hospital and the Royal Marsden Hospital for permission to publish this report, which records part of the work of the joint consultative clinic of the two hospitals. The keeping of records and tracing of patients was largely done by Mrs. I. Appleby, of the secretarial staff of the Institute of Diseases of the Chest. I am grateful to Mr. P. M. Payne, statistician to the Royal Marsden Hospital, for his advice.

## REFERENCES

Adelman, B. P. (1952) *Radiology*, **59**, 390.
Bignall, J. R. (1955) *Lancet*, ii, 210.
Bloch, R. G., Bogardus, G. (1940) *Arch. intern. Med.* **66**, 39.
Brown, D. E. M. (1952) *Brit. J. Radiol.* **25**, 472.
Chandler, F. G., Potter, C. T. (1927) *Lancet*, ii, 596.
Craver, L. F. (1940) *Amer. J. Roentgenol.* **43**, 169.
Farberov, B. E., Baslow, E. A. (1941) *Ibid*, **45**, 701.
Graham, E. A., Singer, J. J., Ballon, H. C. (1935) Surgical Diseases of the Chest. London.
Harnett, W. L. (1952) A Survey of Cancer in London. London.
Hilton, G. (1945) *Brit. J. Tuberc.* **39**, 51.
LaDue, J. S. (1955) *In* Pullen, R. L. Pulmonary Diseases. London.
Leddy, E. T., Moersch, H. J. (1940) *J. Amer. med. Ass.* **115**, 2239.
Maxwell, J., Nicholson, W. A. (1930) *Quart. J. Med.* **23**, 29.
Shorvon, L. M. (1947) *Brit. J. Radiol.* **20**, 443.
Steiner, P. E. (1940) *Arch. intern. Med.* **66**, 140.
Tenzel, W. V. (1941) *J. Amer. med. Ass.* **117**, 1778.
Vinson, P. P. (1936) *Ibid*, **107**, 258.
Widmann, B. P. (1944) *Amer. J. Roentgenol.* **51**, 61.

# RADIOTHERAPY OF CANCER OF THE LUNG

## RESULTS IN A SELECTED GROUP OF CASES

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THE treatment of carcinoma of the lung has hitherto been limited to surgical treatment by pneumonectomy or lobectomy, radiotherapy and chemotherapy in inoperable cases, and the combination of surgery and preoperative and postoperative radiotherapy.

The five-years survival-rate of operable cases varies according to different authors. The figures given by Bignall and Moon (1955) in a survey of cases operated on at Brompton Hospital and at the London Chest Hospital showed that out of 531 cases there was a 32% over-all survival-rate of five years or longer, which continued to fall gradually to 21% in an approximately ten-year follow-up of a limited number of cases. The survival-rate following surgical treatment has improved with technique but is still disappointing.

The results of radiotherapy in cases considered unsuitable for surgery are even more disappointing. Hilton (1955) reports that only 8 of 203 patients selected for radiotherapy survived five years, and at the Christie Hospital, Manchester, Paterson et al. (1950) report that 7 of 254 patients survived five years. Dobbie (1944) and Shorvon (1947) gave an over-all survival-rate of up to 2% for five years. These figures suggest that the treatment of bronchial carcinoma by X rays alone has no real place, but it must be borne in mind that these figures for X-ray treatment refer to cases considered unsuitable for surgery because of spread of disease to the mediastinum and elsewhere. Hence it is quite unrealistic to compare the figures with the survival-rate for cases operated on.

In 1942 one of us (J. S.) saw a patient with a carcinoma of the bronchus who, on bronchoscopy, was deemed inoperable in view of the involvement of the phrenic nerve and paralysis of the diaphragm, and in whom biopsy showed an undifferentiated carcinoma. This case was treated by X rays at St. Bartholomew's Hospital; and, although there was gross X-ray fibrosis of the right lung, the patient was still alive, well, and working thirteen years later, when he developed an infection in his fibrotic lung, which was subsequently drained surgically. He still remains well and working although there is a permanent drain into his infected space.

2 other cases, seen by one of us (G. H.), were considered by surgeons operable from the purely technical point of view—i.e., the growth was situated in such a position that pneumonectomy was possible and no secondary deposits were found—but 1 patient refused operation, and the other was unsuitable because of chronic bronchitis. Both these patients were treated by radical X-ray treatment and survived for more than five years.

In the light of these 3 cases we felt that it would be justifiable to treat a series of selected cases by radiotherapy alone.

### Selection

Each case was judged suitable on the following grounds: the general condition was good; the lesion was localised and situated in such a position that surgery could be undertaken; and there was no evidence of mediastinal glandular involvement either clinically, radiologically, or on bronchoscopy. In each case definite histological proof was secured by bronchoscopy and histological section, or by a positive sputum for new-growth cells before radiotherapy was started.

### Material

So far 33 cases have been treated, the first eight years ago. Of this series 19 were squamous-cell carcinoma and 6 anaplastic carcinoma; in 8 cases the diagnosis was determined by carcinoma cells in the sputum—4 were squamous, and in 4 the precise nature of the cells was not determined, making it impossible to state dogmatically whether these were squamous or anaplastic carcinomas.

### Preparation

Careful preparation of the patient before irradiation was an essential part of the treatment. Measures were taken to improve the general condition and to increase the percentage of hæmoglobin if it was at a low level. If necessary, sepsis was dealt with, infected teeth were removed, and infection in the mouth and upper respiratory tract was attended to. Infection in the lung was treated by postural drainage and with appropriate antibiotics. In some cases several weeks were spent treating the infection before radiotherapy was begun.

### Supervision

The patients were kept under close medical supervision throughout the course of treatment. They were admitted to hospital if possible, especially during the winter. They were given a well-balanced high-calorie diet and full doses of iron and advised to take plenty of rest. Sedatives were given to ensure adequate sleep and to suppress any non-productive cough.

### Radiotherapy

Great care was taken in localising the tumour and assessing the volume to be irradiated, because it was considered that one of the chief causes of failure of radiotherapy in bronchial carcinoma was insufficient dosage to the whole of the cancerous tissue. The whole range of radiological methods was used to assess this. The size and disposition of the treatment fields depended on the size of the tumour-bearing area. Multiple small-field technique was used only if the growth was a squamous carcinoma. If the growth was an undifferentiated or oat-cell tumour, the treatment fields were increased to cover the whole of the mediastinum. The inclusion of so large an area was considered necessary because of the almost certain involvement of many of the mediastinal glands.

A dose of 5000–5500r was delivered to the tumour if the carcinoma was squamous-cell, but only 4000–4500r if it was undifferentiated. The length of the treatment and the amount of radiation to be delivered each day was not prearranged at the beginning of the course. The patient was seen daily by the radiotherapist, and his temperature chart, pulse-rate, respiration-rate, and general condition were studied before deciding the amount of radiation to be given on that day. If there was a rise in temperature or an increase in pulse-rate or respiration-rate, either the dose was decreased or treatment was suspended for a day or two. Great importance was attached to varying the daily dosage according to the patient's condition. The whole course of treatment usually lasted seven to eight weeks.

### Follow-up

Of these patients 12 have been followed up for five years or more, 4 of whom are still alive and well. 3 of these 4 had squamous-cell carcinomas and 1 an anaplastic carcinoma. In this same group 1 other patient survived three years, 2 survived two years or more, and 5 died within the first two years. Over this period in a very limited number of cases this gives a survival-rate of 33%, which figure is similar to the surgical results.

## Discussion

We fully recognise that the number of cases treated in this way is very small and that therefore the figures are not of statistical value, but they suggest that the results of radiotherapy may eventually bear comparison with those of surgery. One must also bear in mind that, with improved apparatus and greater skill, the results of radiotherapy may reasonably be expected to improve.

In 4 cases reported by Brooks et al. (1951), which were treated by X rays alone and came to necropsy, there was no macroscopical evidence of the original growth in the lung. This suggests that the growth, in some cases, can be adequately treated by radiotherapy provided there is no secondary deposit elsewhere.

There are three other factors which may influence the results of treatment :

(1) There is no immediate mortality after radiotherapy, whereas the operative mortality-rate in the series of Bignall and Moon (1955) was about 10%.

(2) Clinical evidence of cerebral metastases seems to be more common after surgical intervention than after radiotherapy : 10 of 25 patients who died after surgery in a series described by Bignall (1955) showed clinical evidence of secondary cerebral deposits, whereas only 2 of 18 patients had cerebral deposits after treatment by radiotherapy.

(3) 24 of 81 cases thought to be operable were found at operation to be inoperable (Bignall 1955). This mistake may well have occurred in our own selection of cases ; hence we also may have been including cases more advanced than was evident.

## Conclusion

Although this is an extremely small series, the results suggest that radiotherapy in selected cases may be an adequate alternative to surgery.

We are indebted to Dr. K. F. W. Hinson, pathologist at the London Chest Hospital, for examining the biopsy sections and sputum for carcinoma cells ; Mr. P. Armitage, honorary statistician to the Institute of Diseases of the Chest, for his advice with regard to our figures and for estimating the standard error ; and Dr. L. Capel for help in preparing the tables.

## Appendix

A more detailed analysis of these results is shown in table I and compared with the results of Bignall and Moon (1955)

TABLE I—SURVIVAL-RATES OF PATIENTS AT 2-MONTH INTERVALS AFTER RADIOTHERAPY

| Interval (completed mos. from bronchoscopy) | " At risk " at start of interval | Survival-rate (%) |
|---|---|---|
| 0–2 | 33 | 100·00 |
| 3–5 | 32 | 100·00 |
| 6–8 | 30 | 96·83 |
| 9–11 | 29 | 96·83 |
| 12–14 | 23 | 76·80 |
| 15–17 | 22 | 73·46 |
| 18–20 | 20 | 70·04 |
| 21–23 | 18 | 63·04 |
| 24–26 | 14 | 55·63 |
| 27–29 | 10 | 43·27 |
| 30–32 | 7 | 38·46 |
| 33–35 | 7 | 38·46 |
| 36–38 | 6 | 38·46 |
| 39–41 | 5 | 32·05 |
| 42–44 | 5 | 32·05 |
| 45–47 | 5 | 32·05 |
| 48–62 | 4 | 32·05 |

in table II. The survival-rate is calculated by the life-table method, which enables those patients followed up over a shorter period to be assessed. Bignall and Moon made similar calculations for their larger series. It will be seen that, in the series treated by radiotherapy, a two-year survival-rate is 55·6%. From statistical considerations the standard error is estimated at 9·3% ; hence the true figure lies between 37% and 74%, with a 95% chance that this is correct.

The two-year survival-rate for surgically treated cases is 45%. At least 10% of the patients treated surgically died within two months of operation and were excluded from the series. This would reduce the two-year survival-rate for surgically treated cases to 42%. This figure lies well within

TABLE II—SURVIVAL-RATES OF PATIENTS LIVING LONGER THAN 2 MOS. AFTER OPERATION *

| Interval (completed mos. from operation) | " At risk " at start of interval | Survival-rate (%) |
|---|---|---|
| 0–2 | 453 | 94 |
| 3–5 | 423 | 82 |
| 6–8 | 367 | 73 |
| 9–11 | 326 | 63 |
| 12–14 | 282·5 | 58 |
| 15–17 | 259·5 | 54 |
| 18–20 | 237 | 51 |
| 21–23 | 222 | 47 |
| 24–26 | 204·5 | 45 |
| 27–29 | 188 | 43 |
| 30–32 | 174 | 41 |
| 33–35 | 162 | 39 |
| 36–47 | 133 | 35 |
| 48–59 | 85 | 33 |

* Taken from Bignall and Moon (1955).

the range of our findings. If a reasonable allowance is made of a standard error of 2½% in the surgical list, it may be calculated that the probability of getting by chance so big a difference in the two-year survival-rate (55·6% for radiotherapy and 42% for surgical resection) is between 0·1 and 0·2.

### REFERENCES

Bignall, J. R. (1955) *Lancet*, i, 786.
— Moon, A. J. (1955) *Thorax*, **10**, 183.
Brooks, W. D. W., Davidson, M., Price Thomas, C., Robson, K. Smithers, D. W. (1951) *Ibid*, **6**, 1.
Dobbie, J. L. (1944) *Brit. J. Radiol.* **17**, 107.
Hilton, G. (1955) British Practice in Radiotherapy. London ; p. 258.
Paterson, R., Tod, M., Russell, M. (1950) Results of Radium and X-ray Therapy in Malignant Disease. Edinburgh ; p. 52.
Shorvon, L. M. (1947) *Brit. J. Radiol.* **20**, 443.

# THE HORNPIPE POSITION

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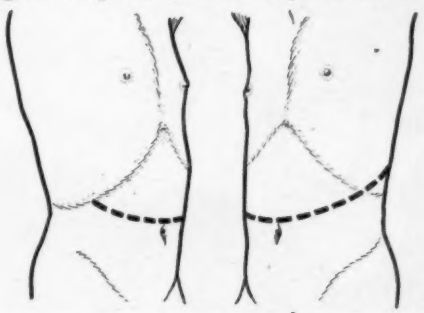
OPERATIONS for portal hypertension require careful planning. The patients need to be fixed on the operating-table in such a position that it is possible to alter the tactical approach in the light of discoveries made on exploration. We had to be prepared, for example, to change from a right lateral approach to the portal vein (through an oblique incision extending from the umbilicus



*a* *b*

**Fig. I—Oblique abdominal incision (*a*) for exploration of portal vein before intended porta caval anastomosis. Vein was found unsuitable; so incision was extended (*b*) to left and up through bed of left 10th rib for lienorenal anastomosis.**

to the 11th right rib) to a left oblique approach to the splenic vein (from umbilicus to the bed of the 10th left rib) (fig. 1).

We concluded that the dorsal position gave us the best exposure and enabled us to obtain standard splenic and portal venograms. Our problem was what to do with the arms. In these circumstances the arms may be defined as rigid articulated structures interfering with the approach to the side of the body. To extend them in the cruciform position was no solution, because that would prevent the vital third assistant from standing headward of the surgeon. To fold the arms on the patient's chest in the usual way did not leave enough room for all surgical manipulations; and we wished to be unrestricted.

We solved the problem by flexing and raising the patient's arms so that they crossed his face as in the start of the hornpipe dance: arms flexed to a right-angle and in a plane as nearly as possible perpendicular to the long axis of the body. The hands come to rest more or less on opposite shoulders, but small pads may be necessary to prevent pressure on the chin or to support one of the forearms on the upper part of the chest. Good fixation can be obtained (as in fig. 2) by using elastic adhesive strapping fixed down the dorsal or ulnar surfaces of upper arm, forearm, and hand and extended on to a convenient point of fixation on the side or under-surface of the operating-table.

Fig. 2 shows that the endotracheal tube, the blood-pressure cuff, and the intravenous-infusion needle are concentrated in as small an area as possible. The anæsthetist can attend to all the patient's requirements without having to move and therefore favours the position. Respiratory movements are in no way impeded. There appears to be no risk whatever of any brachial-plexus palsy. The arms, however, must be prevented from falling upwards if the patient is tipped into the Trendelenburg position.

We have now used this position more than 150 times to great advantage. Care and a little ingenuity are all that is required in fixing the patient quickly and without special apparatus. X-ray cassettes can easily be manipulated in and out of a lateral cassette tunnel—a matter of vital importance in all operations when radiography of either the portal tree or the biliary tract is essential. The costal margin is raised, and the inferior angle of the scapula is rotated forward, improving the exposure in the upper abdomen and opening out incisions which cross the costal margin.

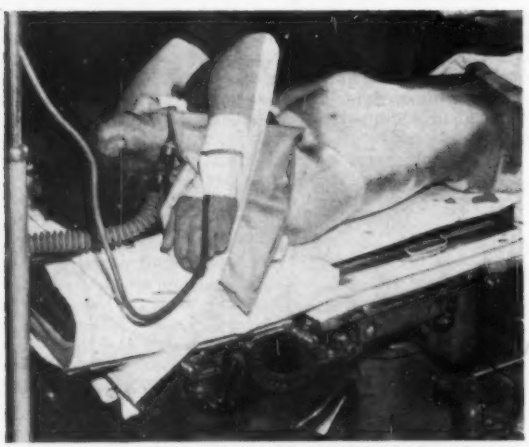


**Fig. 2—Hornpipe position. Note position of arms, raised costal margin, forward rotation of scapula, freedom of approach from front and sides, blood-pressure cuff on right arm, intravenous needle in dorsum of left hand, valves of endotracheal tube, and double cassette tunnel ready for venography. Arms are fixed with elastic adhesive strapping, and in this figure left hand is supported on small pillow.**

We have therefore adopted the hornpipe position for many operations as well as those for portal hypertension: for exploration of the biliary passages and for operations on the pancreas, liver, spleen, cardiac end of the stomach, œsophageal hiatus of the diaphragm, and lower end of the œsophagus. In operations which are certainly going to be restricted to one side of the body it is not always necessary to have both arms elevated, but it may be an advantage if the X-ray cassette tunnel opens on the opposite side of the patient to the surgeon.

Sometimes, after the preliminary investigations of a patient with an obliterated portal tree, it has been decided that proximal gastric resection through a left thoracic incision is the correct approach. In these circumstances additional rotation of the patient's chest towards the right has been easily effected with the minimum of disturbance by pulling on the left arm and fixing it out on a rest.

**Summary**

Fixation of the patient on the operating-table in a position akin to that adopted at the start of the hornpipe dance (fig. 2) is of great value in operations for portal hypertension, &c.

Our thanks are due to Dr. Ronald Bowen who has given most of the anæsthetics; to Miss K. D. Bartlett and the theatre sisters who have helped us with these operations, Miss M. Rutherford, Miss A. F. Mallett, Miss J. B. Christie, and Miss E. A. V. Jenkins; and to Mr. Henry Dossett, our senior theatre orderly, who has always been of the greatest help to us. Fig. 2 is based on a figure which appeared in an article by G. H. du Boulay and B. Green (*Brit. J. Radiol.* 1954, **27**, 423).

## WEIGHT LOSS AND PERNICIOUS ANÆMIA *

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Addison (1855), when describing the clinical picture of pernicious anæmia, wrote: "The bulkiness of the general frame and the obesity often present a most striking contrast to the failure and exhaustion observable in every other respect. . . . The general frame becomes flabby rather than wasted."

Most clinicians and textbooks concur and do not mention loss of flesh as prominent in addisonian anæmia. Students are taught that most patients with the disease are well covered or obese—indeed many are. However, it is not uncommon to find a history of loss of weight, and clinical examination often confirms this. In some cases of pernicious anæmia this weight loss may be quite alarming and may lead the clinician to make another diagnosis, usually malignant disease.

Jones (1938) described 78 patients with pernicious anæmia. 42 of these had lost weight when admitted, this loss ranging from 2 to 42% of their usual weight. Further, he showed that a gain in weight followed treatment (in those days liver by intramuscular injection) in 28 of these 42 patients.

It is our purpose to re-emphasise the importance of these observations and to stress that weight loss in addisonian anæmia is common. As it will be seen—this weight loss misled the clinician on several occasions and

* Read at a meeting of the Middlesex County Medical Society at the Central Middlesex Hospital on Dec. 9, 1955.

had a profound effect on the outcome of the disease in 2 cases.

### Material

50 "new" cases of pernicious anæmia attending hospital were reviewed and their weight losses (if any) were measured. After treatment the patients were weighed regularly for at least eighteen months.

Of our 50 cases it was found that 14 (28%) admitted to losing at least 1 st. in weight in the months preceding admission. The largest weight loss was 3 st. 4 lb., and it is interesting that 4 (28%) of these 14 cases were first diagnosed as carcinoma of the stomach.

2 other cases were similarly diagnosed because of weight loss, which was described as "gross" in 1 case and justifying the label "cachectic" in the other. The amount of weight lost was not recorded in the notes in these cases, so they are not included in the above 14.

Anorexia was commonly associated with weight loss and 12 of the 16 patients who lost weight had this symptom. The anorexia was often accompanied by nausea, upper abdominal pain, and sometimes diarrhœa, and it seems that cases with weight loss commonly have alimentary symptoms. Following our cases after treatment we were able to confirm that weight loss seems to be regained fully after vitamin-$B_{12}$ therapy, often rapidly but sometimes not for twelve to eighteen months.

An example of gross weight loss in pernicious anæmia and of a resulting mistaken diagnosis is given below.

**Case 1.**—A man, aged 65, was seen as an outpatient complaining of severe anorexia and gross loss of weight—3 st. in four months. This was accompanied by central epigastric pain and vomiting. There was clinical anæmia, wasting, and slight jaundice but no other abnormal physical signs. Because of these signs the diagnosis on admission was malignant disease of the "alimentary tract or pancreas."

*Investigations.*—Weight: 13 st. 12 lb. Blood-count: Hb 5·6 g. per 100 ml. (38%), red cells 1,200,000 per c.mm., mean corpuscular volume 133 c.μ, mean corpuscular hæmoglobin concentration 35%, white cells normal. Bone-marrow biopsy: extreme cellularity with megaloblastic erythropoiesis. Barium meal: normal. Fractional test-meal: histamine-fast achlorhydria.

*Progress.*—After vitamin-$B_{12}$ therapy there was a reticulocytosis reaching 25% on the seventh day, with subsequent improvement in the hæmoglobin level. Most dramatic of all was the rapid return of well-being with a voracious appetite and a quite remarkable increase in weight. He put on $1^1/_2$ st. in the fourteen days after the first injection, is now very well and symptomless with a normal blood-count, and in six months has regained $2^1/_2$ st. of his lost weight.

Though the severe weight loss in this case temporarily misled the clinician and caused the patient to have an unnecessary barium meal, the outcome was most gratifying.

However, there are cases in which such a fortunate outcome is not obtained, and failure to recognise that weight loss is fairly common with pernicious anæmia may have disastrous results as in the following case.

**Case 2.**—A woman, aged 67, was admitted with a history of pallor, shortness of breath, anorexia, and "considerable loss of flesh" in the past year. Four months before admission she had been seen by a specialist who, because of the anorexia, slight icterus, cachexia, and hepatomegaly, diagnosed carcinomatosis from a gastric primary neoplasm. Unfortunately, because of her age and feebleness he did not investigate her further.

*On admission* she was grossly anæmic and wasted. There was slight icterus and some epigastric tenderness, but no other abnormality.

*Investigations.*—Hb 17%. Red cells 630,000 per c.mm., red-cell diameter 8·4 μ. Blood-film showed pronounced anisocytosis and poikilocytosis.

*Course.*—Despite intensive treatment with intramuscular injections of liver extracts, as was usual at this time, and slow administration of a blood-transfusion, she died three days after admission, without responding to treatment.

*Necropsy* revealed the classical changes of pernicious anæmia in the bone-marrow and gastric mucosa.

Fortunately such errors in diagnosis are not common, but there is little doubt that this illness, if detected earlier, would not have been fatal. The simulation of malignant disease was here so close as to lead to a confident diagnosis of carcinomatosis. There is, therefore, a risk that patients with pernicious anæmia will be dismissed as having untreatable cancer, particularly when weight loss is severe.

This danger, though small, is much greater when pernicious anæmia develops in patients who have already been treated for malignant disease, because when loss of weight, pallor, jaundice, and hepatomegaly develop, and they complain of anorexia and general ill health, it is easy to assume that metastases have arisen from their original neoplasm. Hence the symptoms and signs of pernicious anæmia may be mistaken for those of widespread neoplasia, particularly if the surgeon concerned is not used to recognising and treating pernicious anæmia. The next case illustrates this danger.

**Case 3.**—A man, aged 77, was operated on in 1943 for a rectal neoplasm. The growth was excised and a colostomy performed. He remained well until 1952 when he began to complain of anorexia, loss of weight, and general debility. The surgeon attending him noticed that he was anæmic and jaundiced and that his liver was palpable. Carcinomatosis was diagnosed, so no investigations were done till a year later when he was admitted moribund.

*On admission* he was obese, anæmic, and slightly icteric. The liver was firm, smooth and enlarged three finger-breadths below the right costal margin. Apart from a normally functioning colostomy there were no other abnormal physical signs.

*Investigations.*—Hb 4·9 g. per 100 ml. (33%). Blood-film showed pronounced macrocytosis, anisocytosis, and poikilocytosis. Bone-marrow biopsy: changes of classical megaloblastic erythropoiesis.

*Course.*—Vitamin-$B_{12}$ therapy induced a reticulocytosis of 16%; but the patient contracted bronchopneumonia a week after the start of treatment, and this, together with his anæmia, resulted in his death.

*Necropsy* revealed the changes of pernicious anæmia. There was no evidence of any recurrence of the rectal neoplasm.

### Discussion

In about a third of all cases of pernicious anæmia weight loss, usually associated with anorexia, is an important feature. This loss may be masked by: (1) patients being stout despite their loss of flesh, and (2) elderly patients being uncertain of their usual weight.

We have shown that in pernicious anæmia severe weight loss may result in a mistaken diagnosis and an occasional tragedy. The simulation of malignant disease is in some cases very close and may be misleading.

In dealing with patients who complain of loss of weight, pernicious anæmia should be remembered as a possible cause. Usually severe weight loss in such cases is accompanied by correspondingly severe anæmia, but we have seen cases where weight loss of a stone or more has been present with a hæmoglobin of 70% or higher. It is, therefore, important to examine blood-films and bone-marrow where weight loss has occurred. Of course clinical evidence of anæmia accompanying weight loss and other alimentary symptoms may well be due to a malignant neoplasm of the alimentary tract, but it is always worth while fully investigating the anæmia before sending patients for radiographic studies of the alimentary tract. When pernicious anæmia has been diagnosed and treatment instituted, the return of appetite, weight, and well-being will usually dispel all thoughts of neoplasia.

It has been shown that carcinoma of the stomach is commoner in patients with pernicious anæmia than in other members of the community (Videbaeck and Mosbech 1954), and an incomplete response to vitamin-$B_{12}$ and persistence of alimentary symptoms may occasionally lead to the discovery of a gastric neoplasm. However,

if barium meals are to be done in patients misdiagnosed as having malignant disease these are much better tolerated after, than before, the appropriate therapy

It is interesting to speculate as to the cause of weight loss in these patients. Vitamin $B_{12}$ has been shown experimentally to act as a "growth factor." It has also been used with success by some workers (Larcomb et al. 1954) in the treatment of underweight school-children. Thus one might expect the depletion of vitamin $B_{12}$ in pernicious anæmia to cause loss of weight, and it is difficult to see why this is not more common and more severe.

We do not pretend to have produced anything new or unusual in this paper, but we believe that the recognition of weight loss as a complication of pernicious anæmia is both of interest and of importance.

REFERENCES

Addison, T. (1855) On the Constitutional and Local Effects of Diseases of the Suprarenal Capsules. London.
Jones, E. (1938) *Amer. J. med. Sci.* **195**, 150.
Larcomb, J. W., Perry, C. S., Peterman, R. A. (1954) *J. Pediat.* **45**, 70.
Videbaeck, A., Mosbech, J. (1954) *Acta med. scand.* **149**, 137.

# A SHORT SMALL INTESTINE ASSOCIATED WITH FIBROSIS OF THE LIVER

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THERE is considerable experimental and clinical evidence that dietary deficiency or imbalance may either cause liver disease or influence unfavourably the progress of non-nutritional liver disease.

Himsworth and Glynn (1944) showed that both massive hepatic necrosis and diffuse hepatic fibrosis (portal cirrhosis) could be produced experimentally in laboratory animals by an abnormal diet; massive necrosis by methionine or cystine deficiency, and diffuse fibrosis by a high-fat diet with a moderate amount of protein. Diffuse fibrosis follows severe fatty change in the liver cells; it develops around the portal tracts and central veins and is essentially a replacement fibrosis. The fibrosis of congestive heart-failure develops in a similar manner (Day and Armstrong 1940) from the portal tracts and from the region of the central vein.

Dietetic liver disease in laboratory animals is most easily produced in young males (Farber et al. 1951) and may be enhanced by the administration of thyroid gland (Beveridge 1954), retarded by giving antibiotics (György et al. 1951), and even prevented by rearing the animals in strictly aseptic conditions from the moment of birth (György 1954).

In man the tropical and subtropical syndromes of dietetic liver disease are probably closely related to the diffuse fibrosis following fatty degeneration seen in the rat; but in temperate climates nutritional liver disease is probably nearly always due to protein deficiency caused by the effects of extrahepatic disease or of alcoholism, the latter a more complex situation in which toxic and nutritional factors combine.

Hepatic fatty change followed by fibrosis is stated to be often associated with ulcerative colitis; Kimmelstiel et al. (1952) put the frequency at 40%. The contributory factors in this disease are dietary restriction, impaired intestinal absorption, blood-loss, and possibly bacteræmia.

A similar situation might well arise after extensive resection of small intestine, but it seems clear that the intestine is more than adequate in area; considerable lengths may be removed with impunity, and, as surgeons are alert to the possibility of intestinal insufficiency, after very extensive operation the diet will be reinforced.

Hypoplasia of the intestine has not been incriminated, and for that reason the following cases are described. The measurements taken were from the duodenojejunal flexure to the cæcum.

## Case-reports

**Case 1.**—A woman, aged 72, was admitted in coma. She had complained of headaches and had not been quite fit for several years. About a year previously she had been treated for generalised œdema and given digoxin and mersalyl, and for the last few weeks she had had vomiting, swelling of the legs, and enlarging abdomen. She died three days after admission; deepening coma, ascites, œdema, and albuminuria were the only positive findings.

*Necropsy Findings.*—A wasted and œdematous woman with bilateral pleural adhesions and severe œdema of the lungs. The liver weighed 28 oz. and was shrunken and fibrous, with regeneration nodules throughout. The spleen was firm but of normal size. The peritoneal cavity had been tapped and contained only two pints of fluid. The jejunum and ileum together measured 11 ft. but appeared otherwise normal. All organs and tissues were œdematous.

*Histology.*—The liver showed severe fibrosis, with proliferation of bile-ducts and an abundance of chronic inflammatory cells in the portal tracts. There were changes due to portal obstruction in the spleen, and the jejunum and ileum contained a few areas of neutrophil leucocytic infiltration in the mucosa.

**Case 2.**—A woman, aged 62, complained of lassitude, weakness, and diarrhœa of about two months' duration. She had been vaguely unwell for five years, and four years previously she had been investigated because of attacks of diarrhœa, and her blood-pressure had been found to be 230/130 mm. Hg, her liver had been palpable. She now presented with severe anæmia (Hb 44%) and ascites. Her condition rapidly deteriorated and she died.

*Necropsy Findings.*—A pallid and wasted woman. No jaundice. Venules on the nose and prolapsed hæmorrhoids. 6 pints of fluid in the peritoneum. The liver weighed 32 oz. and showed diffuse fibrosis. There were scanty regeneration nodules about 0·5 cm. in diameter. The spleen weighed 10 oz. The other organs showed changes due to anæmia. The small intestine measured 6 ft. and was otherwise normal.

*Histology.*—Fibrosis of the liver with regeneration of liver cells and bile-ducts and infiltration of the fibrous tissue by inflammatory cells. The spleen showed a myeloid reaction in addition to changes due to portal obstruction. Sections of the intestine were normal but for slight œdema.

**Case 3.**—A woman, aged 59, complained of steadily increasing lassitude, loss of appetite, loss of weight, and occasional diarrhœa for more than a year. Four siblings and four children were perfectly healthy. Her liver and spleen were impalpable, but she had severe ascites, distension of abdominal veins, moderate œdema, and severe secondary anæmia (Hb 34%). She died within two days of admission.

*Necropsy Findings.*—A sallow wasted woman with œdema of the legs and distended abdomen. Ascites of 12 pints. The liver weighed 32 oz., its capsule was wrinkled, and section showed diffuse fibrosis, the pattern being distinctly coarser in the right lobe. The spleen was firm and weighed 6 oz. The other organs showed changes due to anæmia and œdema, and there was terminal bronchopneumonia. The small intestine measured $4^1/_2$ ft., jejunum 3 ft., and ileum $1^1/_2$ ft. There was no evidence of any disease to account for this extraordinary appearance. The marrow of the vertebræ showed active regeneration.

*Histology.*—The liver showed diffuse portal fibrosis and centrilobular necrosis, with some regeneration of bile-ducts and scattered inflammatory cells, but there was practically no regeneration of liver cells. The spleen showed changes due to portal obstruction and a slight myeloid reaction. The jejunum and ileum showed subacute inflammation confined to the mucosa, and there was chronic inflammation of the mucosa of the colon. Active hæmopoiesis in bone-marrow of vertebræ.

**Case 4.**—A woman, aged 80, was admitted in a confused state and incontinent after a short period of coma. No

history could be obtained other than that of repeated hæmatemesis during the previous three months. She died forty-eight hours later after a hæmatemesis.

*Necropsy Findings.*—Of senile physique, wasted and slightly jaundiced. Hæmorrhage from œsophageal varices, and much blood in stomach and intestines. Œdema of lungs; brown atrophy of myocardium; ischæmic scarring of the kidneys. Liver shrunken, with prominent regeneration nodules. Spleen enlarged and firm. Moderate ascites. Length of small intestine 12 ft. 6 in.

*Histology.*—Chronic inflammation of the mucosa of the jejunum, with focal subacute inflammation. The ileum and colon were normal. The liver showed coarse fibrosis, with fatty degeneration of the residual cells and regeneration of bile-ducts.

**Case 5.**—A man, aged 52, complained of vomiting blood at intervals for a year. He had always been regarded as an invalid and until the age of 20 had epileptic fits. He had lost weight recently, fluid was present in his abdomen, his ankles were swollen, and his superficial abdominal veins were distended. He died after a severe hæmatemesis.

*Necropsy Findings.*—A thin, œdematous, and lightly jaundiced male with venules on nose and prominent abdominal veins. Bilateral pleural effusions, each of about 2 pints, and severe pulmonary œdema. Ascites of 4 pints. Œsophageal varices present but not ruptured. Hæmorrhage from multiple acute erosions of stomach and colon. The liver weighed 90 oz. and showed diffuse portal fibrosis, small regeneration nodules being more prominent in the left lobe than in the right. The spleen showed changes due to portal obstruction and weighed 15 oz. The small intestine measured 14 ft.

*Histology.*—Portal fibrosis of liver with regeneration of liver cells and bile-ducts. Section of intestine showed slight terminal inflammation of mucosa.

### Discussion

There is very little accurate information about the length of the small intestine, 18–23 ft. being the usual estimate, but Underhill (1955) has found the following measurements (including the duodenum):

| | *No. of cases* | *Minimum ft.* | *Average ft. in.* | *Maximum ft. in.* |
|---|---|---|---|---|
| Male .. | 65 | 16 | 20 11 | 25 9 |
| Female .. | 35 | 11 | 19 5 | 23 6 |

There is still no guide to the normal range, and it would be interesting to know the causes of death of patients with a short intestine and whether any had hepatic fibrosis.

There are four possible causes of a short small intestine: (1) surgical interference (which can be excluded in the present cases); (2) intestinal disease or disease elsewhere; (3) hypoplasia; and (4) simple atrophy (for which there is no evidence).

It is theoretically possible that a severe inflammation of the mesentery and serosal surface of the intestine—e.g., tuberculosis—in an adolescent might limit the normal growth of the intestine; and so might internal inflammation, but this would more likely cause local deformity and a disturbance of the jejunum/ileum ratio.

Disease in other sites may also influence the intestine.

A woman, aged 47, who died of bronchopneumonia, had a most severe angular deformity of the lower cervical spine and a remarkable kyphoscoliosis, the result of spinal tuberculosis during adolescence. Her lungs were small, her liver depressed, and her small intestine 13 ft. long. The growth of her intestine was probably limited by the bodily distortions. In precisely the same way one malformation in utero may induce other malformations in surrounding organs (Raeburn 1951).

In the present cases, however, nothing suggested antecedent disease as a cause of intestinal hypoplasia.

Hypoplasia remains, and in the complete absence of any local disease this, we suggest, is the true explanation. Whether this is entirely a failure of natural postnatal growth, or whether congenital or familial factors operate, is unknown.

In cases 1–4 the length of the small intestine was only 25–66% of the average and was well below the accepted minimal normal length of 14 ft. Even this deficiency would not necessarily produce any detectable impairment of intestinal absorption; but, if there were any severe intestinal disturbance, such a person would be liable to liver damage because of the small reserve of function.

There is no direct evidence that a short intestine contributes to hepatic fibrosis, but it is not a common condition and is therefore worthy of record. Of the 5 present cases 4 were in females. Hepatic fibrosis is stated to be twice as common in males as in females (Anderson 1953).

We have since observed 2 other cases of portal fibrosis, both in males, 1 of them being associated with hæmochromatosis. In these 2 cases and in numerous instances of "cardiac fibrosis" the intestine was of normal length.

### Summary

5 cases of short small intestine associated with hepatic fibrosis are described.

Perhaps measurement of the alimentary tract should be a routine post-mortem procedure.

In none of the present cases was there any history of acute hepatitis.

### REFERENCES

Anderson, W. A. D. (1953) Pathology. London; p. 815.
Beveridge, J. M. R. (1954) *Ann. N.Y. Acad. Sci.* **57**, 873.
Day, T. D., Armstrong, T. G. (1940) *J. Path. Bact.* **50**, 221.
Farber, E., Weser, D. K., Popper, H. (1951) *Endocrinology*, **48**, 205.
György, P. (1954) *Ann. N.Y. Acad. Sci.* **57**, 925.
— Stokes, J. jun., Goldblatt, H., Popper, H. (1951) *J. exp. Med.* **93**, 513.
Himsworth, H. P., Glynn, L. E. (1944) *Clin. Sci.* **5**, 93.
Kimmelstiel, P., Large, H. L. jun., Verner, H. D. (1952) *Amer. J. Path.* **28**, 259.
Raeburn, C. (1951) *J. Path. Bact.* **63**, 160.
Underhill, B. M. L. (1955) *Brit. med. J.* ii, 1243.

## EFFECT OF TRIIODOTHYROACETIC ACID ON BLOOD-CHOLESTEROL LEVELS

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THE acetic-acid analogue of thyroxine was synthesised by Harington and Pitt-Rivers (1952) and the acetic-acid analogue of triiodothyronine by Pitt-Rivers (1953). These compounds were named tetraiodothyroacetic acid and triiodothyroacetic acid respectively; and the name of the latter compound has been still further abbreviated to triac (Trotter 1955).

Both compounds were assayed physiologically by Pitt-Rivers (1953) using the goitre-prevention test in rats. Both had about a tenth of the activity of triiodothyronine, and it was shown that triac, given by daily injections, raised the oxygen consumption of intact rats.

Thibault and Pitt-Rivers (1955) have shown that, unlike thyroxine and triiodothyronine, triac appears to have an immediate effect on the oxygen consumption of kidney slices in vitro; and the same workers described an increase in the oxygen consumption of thyroidectomised rats only two hours after a single injection. Roche et al. (1955) have identified triac in kidney slices incubated with $^{131}$I-labelled triiodothyronine. It is therefore possible that triac is normally formed from triiodothyronine in the body, and that the oxidative deamination and decarboxylation of triiodothyronine to triac are an essential step in the process by which the thyroid hormones exert their action on the tissues.

Triac is therefore a substance of considerable physiological interest, and it became desirable to know something of its action in man. It was first administered to man by Lerman and Pitt-Rivers (1955). They gave repeated injections to 2 patients with myxœdema. The

results were rather surprising: both patients felt better, the signs of myxœdema diminished, and the blood-cholesterol level fell, but the basal metabolic rate (B.M.R.) remained unchanged at a low level. These observations suggested that triac might differ qualitatively in its physiological effects from thyroxine and triiodothyronine. However, experience with another case of myxœdema (Trotter 1955) showed that oral triac could raise the B.M.R. in addition to relieving the symptoms of myxœdema and depressing the blood-cholesterol level. But subsequently it was found that, when this patient was treated with thyroxine, his blood-cholesterol level remained not much below its original level in spite of a greater increase in B.M.R. than had been obtained with triac (fig. 1). This again raised the possibility that the action of triac might differ from that of thyroxine, though it was clear that the difference could not be absolute. But it remained possible that triac could have a relatively greater action on the blood-cholesterol level than on the B.M.R., compared with thyroxine. This possibility would not only be of theoretical interest but might also afford a means of lowering the blood-cholesterol levels of euthyroid people without causing side-effects.

Some further results are now reported. In 2 other cases of myxœdema an attempt was made to compare the effects of triac and of triiodothyronine on the B.M.R. and the blood-cholesterol levels. Triac was also given to 3 euthyroid people to discover whether the blood-cholesterol level can be lowered without an increase in the B.M.R. In addition, the short-term effect of triac on the blood-cholesterol level was investigated in 15 other euthyroid people, but without estimation of the B.M.R., and 12 other comparable patients were similarly treated with triiodothyronine.

## Methods

A standard apparatus of Benedict-Roth type was used for B.M.R. determinations, using Aub-Dubois standards. The patients spent the previous night in hospital in all cases.

The plasma-cholesterol level was estimated by a modification of the method of Sackett (1925). The patients were fasting when the blood was taken. Triac, triiodothyronine, and thyroxine were administered orally as tablets in twice daily doses.

## Material

*Cases of Myxœdema*

**Case 1** has been described previously (Trotter 1955).

**Case 2.**—A man, aged 53, had noticed during the past two years increasing fatigue and slowness. He had become sensitive to cold, and his voice had become hoarse and his skin rough. On examination he showed much puffiness round his eyes, and his skin was dry and thickened. His thyroid gland was impalpable. The uptake of radio-iodine was 18% in twenty-four hours and the initial B.M.R. −31%.

**Case 3.**—A woman, aged 73, had been diagnosed, ten years previously as having pernicious anæmia, which responded well to liver injections and, at the time of admission, was well controlled by fortnightly injections of vitamin $B_{12}$. Her hæmoglobin was 94%. During the past two years she had become increasingly sensitive to cold, and her hair was coming out. Her voice was hoarse and her skin rough and dry. Her thyroid gland was impalpable. The uptake of radio-iodine was 8% in twenty-four hours and the initial B.M.R. −32%.

**Case 4.**—A woman, aged 63, complained of swelling of the face and increased sensitivity to cold for the past six weeks. Her hair had been coming out for the last few years. Her face was bloated and her skin dry. She had severe hypertension (blood-pressure 210/150 mm. Hg) and radiography of her chest showed enlargement of the left ventricle. Electrocardiography showed right bundle-branch block. The uptake of radio-iodine was 7·5% of the dose at twenty-four hours. The plasma-cholesterol level (determined before admission) was 406 mg. per 100 ml. and the initial B.M.R. −30%.

*Euthyroid Patients*

**Case 5.**—A man, aged 72, had had thyrotoxicosis in 1939. This was treated by subtotal thyroidectomy. There was no subsequent recurrence of symptoms, the thyroid gland was impalpable, and there was no clinical evidence of myxœdema. In 1950 he started to get precordial pain on exertion, and in 1953 he also developed typical intermittent claudication. In 1951 his plasma-cholesterol level was 360 mg. per 100 ml. Thyroxine up to 0·5 mg. daily had no clinical effect and did not produce any definite change in the plasma-cholesterol level. In 1953 his plasma-cholesterol level was 495 mg. per 100 ml.; he was not having any treatment at this time. Before triac was started he could walk only slowly, being limited both by intermittent claudication and by anginal pain. He was somewhat obese, though otherwise normal in appearance. Radiography showed that his heart was normal in size. Electrocardiography showed much depression of the ST segment in lead $V_5$. The uptake of radio-iodine was 28% in twenty-four hours and the initial B.M.R. +7% and −6%.

**Case 6.**—A man aged 57, had had coronary thrombosis in 1947 and in 1950, with electrocardiographic changes on both occasions. In 1953 he was readmitted because of a sudden attack of precordial pain, but electrocardiography did not suggest that a further infarct had developed. Since his first thrombosis he had been subject to precordial pain, both at rest and on exertion, but the description did not sound typical of anginal attacks. There were no abnormal findings on physical examination, except that the blood-pressure was 164/100 mm. Hg. Before the start of triac therapy the uptake of radio-iodine was 10% and 11% in twenty-four hours (measured on separate occasions). The low uptake could not be explained by any drugs he was taking. He did not appear at all myxœdematous, and the B.M.R. before the start of treatment was −6%, +5%, and +1% (readings on separate days) and the plasma-cholesterol level 269 mg. per 100 ml.

**Case 7.**—A man, aged 56, had been admitted fifteen months previously with a typical attack of coronary thrombosis and electrocardiographic changes characteristic of a recent anterior infarction. Before triac was started, his only symptom was mild breathlessness on exertion. There were no abnormal physical findings. Electrocardiography showed deeply inverted T waves in lead $V_3$. The uptake of radio-iodine was 41% in twenty-four hours and the initial B.M.R. −16% and −12%. The initial plasma-cholesterol level was high (365 mg. per 100 ml.), but the absence of clinical signs and the normal uptake of radio-iodine were considered to exclude myxœdema.

The remaining euthyroid patients were all women with slight to moderate goitres without evidence of either thyrotoxicosis or myxœdema.

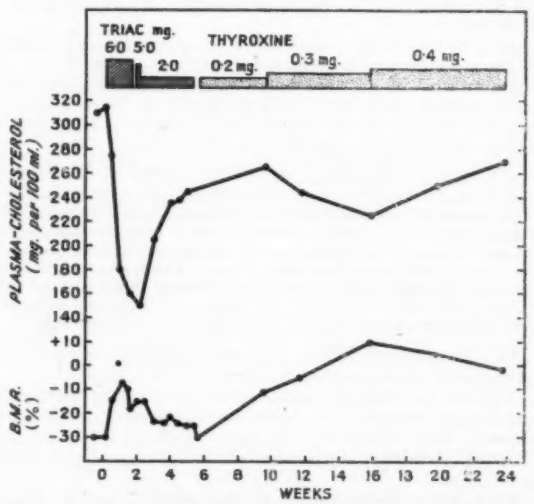


**Fig. 1.—Effect of triac and of thyroxine on blood-cholesterol level and B.M.R. in myxœdema.**

## Results

*Myxœdema*

Before attempting to compare the effects of triac on the blood-cholesterol level and B.M.R. it was necessary to get some idea of the speed and duration of its action. If, as experiments on animals suggest, its action is both more rapid and more transient than that of the other thyroid hormones, the time interval between the administration of triac and estimation of the B.M.R. might be critical. I have suggested above that the observations of Lerman and Pitt-Rivers (1955) may indicate a greater effect of triac on the blood-cholesterol level than on the B.M.R.; but, since in their cases the triac was given in the afternoon and the B.M.R. was not measured until the following morning, it might equally well be argued that a sharp but transient rise in the B.M.R. may have taken place undetected in the interval. The same objection might be brought against the present observations, although in this instance triac was given twice daily and the patients were instructed to take the evening dose between supper and bedtime (at the time of estimation of the B.M.R. they were routinely asked whether they had in fact taken the previous evening's dose at the usual time). This criticism would not apply to case 1 while he was receiving 6 mg. of triac daily, because during that time the triac was being given four-hourly day and night; and the maximum effect of triac on the B.M.R. certainly persists longer than four hours. As a matter of fact, it was shown for this patient (Trotter 1955) that, when he received triac 2 mg. daily as a single dose, the time-interval between its administration and the estimation of the B.M.R. could be varied between one and twenty-three hours without affecting the result.

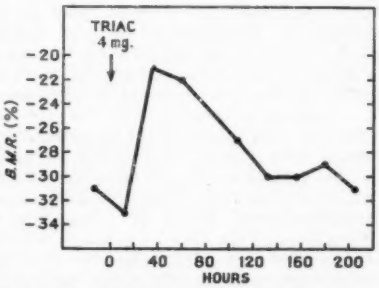


Fig. 2—Effect of single oral dose of triac 4 mg. on B.M.R. in myxœdema (case 2).

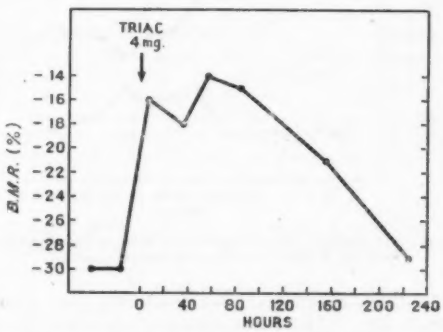


Fig. 3—Effect of single oral dose of triac 4 mg. on B.M.R. in myxœdema (case 4).

The effect of single oral 4 mg. doses of triac on cases 2 and 4 before the patients had received any treatment is shown in figs. 2 and 3. In both patients there was a slight but significant rise in the B.M.R. In case 4 this was already present nine hours after the dose, but in case 2 it was not apparent until thirty-six hours. The B.M.R. remained raised in case 2 for two days and in case 4 for four days. If these patients are representative, it seems certain that, when triac is given at twelve-hour intervals, its effects should be fairly assessed by B.M.R. estimations done from twelve to fifteen hours after the last dose.

Fig. 1 shows the effect of continued administration of triac and of thyroxine in case 1. Both drugs increased the B.M.R. and lowered the blood-cholesterol level. With triac 6 mg. daily the blood-cholesterol level fell to 150 mg. per 100 ml., yet the highest B.M.R. was only −8%. With thyroxine, on the other hand, the lowest blood-cholesterol level observed on any dose was 225 mg. per 100 ml., but the B.M.R. at the time was +10%. It will be seen that with both drugs the blood-cholesterol level and the B.M.R. varied reciprocally, but in the case of triac a given increase in the B.M.R. was associated with a larger fall in the blood-cholesterol level. It is, however, possible that the comparison of the two drugs is to some extent invalidated because the subject was an inpatient while receiving triac, and an outpatient while receiving thyroxine.

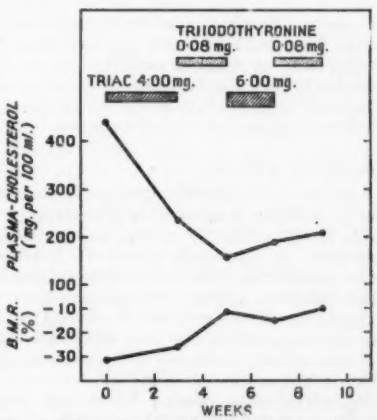


Fig. 4—Effect of triac and of triiodothyronine on blood-cholesterol level and B.M.R. in myxœdema (case 2).

Figs. 4 and 5 show the effects of triac and of triiodothyronine in cases 2 and 3. In case 2 treatment was started with triac 4 mg. daily. This practically reproduced the results of Lerman and Pitt-Rivers (1955), in that there was a substantial fall in the blood-cholesterol level with almost no change in B.M.R. In case 3, however, even 2 mg. of triac daily caused an appreciable rise in B.M.R. as well as a large drop in the blood-cholesterol level. After the initial response had been obtained triac and triiodothyronine were given alternately for two to four weeks at a time. In both cases the relative effect of the two drugs on the B.M.R. and the blood-cholesterol level appeared to be much the same. In case 2, the effect of 6 mg. of triac was similar to the effect of 0·08 mg. of triiodothyronine, as regards both B.M.R. and cholesterol. In case 3, 3 mg. of triac would appear to be roughly equivalent to 0·04 mg. triiodothyronine.

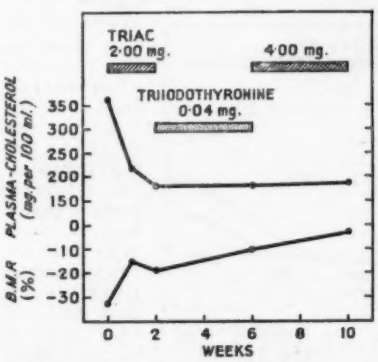


Fig. 5—Effect of triac and of triiodothyronine on blood-cholesterol level and B.M.R. in myxœdema (case 3).

TABLE I—EFFECT OF ADMINISTRATION OF THREE DRUGS IN DAILY DOSES FOR TWO WEEKS ON UPTAKE OF RADIO-IODINE, MEASURED BY NECK/THIGH RATIO TWO HOURS AFTER TRACER DOSE

| Drug | Dose (mg. daily) | No. of patients | Initial neck/thigh ratio (mean ± S.E.) | Final neck/thigh ratio (mean ± S.E.) |
|---|---|---|---|---|
| Thyroxine .. .. | 0·4 | 13 | 7·0 ± 1·02 | 2·7 ± 0·42 |
| Triiodothyronine .. | 0·04 | 4 | 8·2 ± 1·51 | 2·7 ± 0·45 |
| Triiodothyronine .. | 0·08 | 4 | 7·6 ± 2·42 | 2·4 ± 0·84 |
| Triac .. .. .. | 2·0 | 7 | 8·1 ± 1·89 | 1·5 ± 0·18 |
| Triac .. .. .. | 3·0 | 4 | 5·1 ± 0·83 | 2·3 ± 0·73 |
| Triac .. .. .. | 4·0 | 4 | 8·7 ± 1·76 | 1·7 ± 0·18 |
| Controls (dummy tablets) | .. | 3 | 6·3 ± 2·07 | 6·1 ± 1·17 |

It seems therefore that in these 2 cases of myxœdema triac has about a seventy-fifth of the activity of triiodothyronine, as regards both elevation of the B.M.R. and depression of the blood-cholesterol level. Further comparisons of triac, triiodothyronine, and also thyroxine are being made in both these patients.

*Euthyroid Patients*

In the 3 euthyroid subjects whose B.M.R. were also measured the dose of triac was initially 1 mg. daily and was raised gradually to 3 or 4 mg. daily. This was done because it was anticipated that triac would inhibit the production of thyroid-stimulating hormone by the pituitary gland. The patient's own thyroid would then cease to secrete, and he would require larger doses of exogenous hormone to produce effects after the stores of endogenous hormone had been exhausted. In case 4 the initial radio-iodine uptake of 28% was reduced to 3% after three weeks' treatment with triac (1 mg. daily for a week followed by 2 mg. daily for two weeks). In case 6 the initial uptake of 41% was reduced to 4% after six weeks' treatment (1 mg. daily for four weeks followed by 2 mg. daily for two weeks). In 15 cases of non-toxic goitre treated with triac for two weeks measurements of the ratio of neck count to thigh count at two hours after a tracer dose of radio-iodine were available ("neck/thigh ratio"). These figures were comparable to those found by Morgans et al. (1952) in cases of non-toxic goitre treated with 0·4 mg. of L-thyroxine for two weeks. In table I the two series have been compared, together with some results in comparable cases treated with two different dosages of triiodothyronine. It will be seen that the degree of inhibition obtained with 2–4 mg. of triac daily is at least as large as with 0·40 mg. of thyroxine or 0·04–0·08 mg. of triiodothyronine. This suggests at first sight that triac is much more potent in this test (relative to triiodothyronine) than appeared from the effects of the two drugs on the blood-cholesterol level and the B.M.R. in the 2 cases of myxœdema; but in interpreting these figures one must take account of the possibility that much of the iodine contained in triac may be released sooner or later as iodide. Although the amount of iodide released by 0·4 mg. of thyroxine is insufficient to affect the radio-iodine uptake (Morgans et al. 1952), the amount released by 2 mg. of triac might well depress the uptake to some extent. Nevertheless it seems reasonable to assume that at least part of the decrease in uptake is attributable to the inhibition of production of thyroid stimulating hormone because such inhibition has been shown in animals (Pitt-Rivers 1953). If this is so, it would be expected that the effects of a constant dose of triac on the blood-cholesterol level and metabolism would be greatest when administration is first started, and would decrease progressively as the patient's own contribution of thyroid hormone declines. This view is supported by observations on the blood-cholesterol levels of 3 patients with non-toxic goitre, treated for up to ten weeks with a constant dose of 2 mg. of triac daily (fig. 6). The blood-cholesterol levels were initially depressed but gradually reverted towards their original levels.

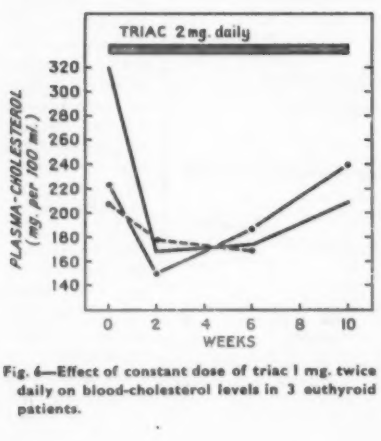


Fig. 6—Effect of constant dose of triac 1 mg. twice daily on blood-cholesterol levels in 3 euthyroid patients.

The results obtained by a gradual increase in triac dosage are shown in figs. 7–9 (cases 5-7). In all 3 cases

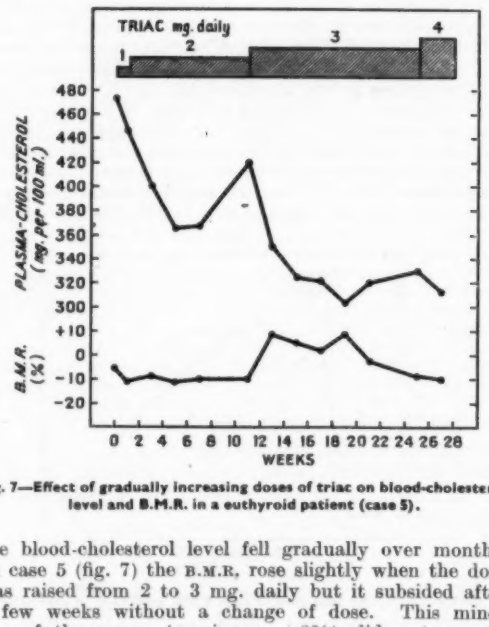


Fig. 7—Effect of gradually increasing doses of triac on blood-cholesterol level and B.M.R. in a euthyroid patient (case 5).

the blood-cholesterol level fell gradually over months. In case 5 (fig. 7) the B.M.R. rose slightly when the dose was raised from 2 to 3 mg. daily but it subsided after a few weeks without a change of dose. This minor rise of the B.M.R. (maximum +8%) did not appear to inconvenience the patient although he has severe angina of effort. Electrocardiography on six occasions while he was taking triac showed no significant change. The small fluctuations in the B.M.R. observed with cases 6 and 7 were not considered to be significant and were not associated with any change in symptoms. Pulse-rate and blood-pressure did not alter significantly in any of the 3 patients. Their body-weights fell by 2–5 lb. over the period indicated in the charts.

Triac was also given for two weeks to 15 women with small non-toxic goitres. The plasma-cholesterol level was estimated in the fasting state at the beginning and end of the two weeks. 12 similar patients were treated for the same length of time with triiodothyronine in doses of 0·04 and 0·08 mg. daily. In addition, 4 similar patients were given dummy tablets for two weeks. The results are shown in table II. It will be seen that doses of 2, 3, or 4 mg. of triac daily depressed the plasma-cholesterol level by about 26%. All 15 patients treated

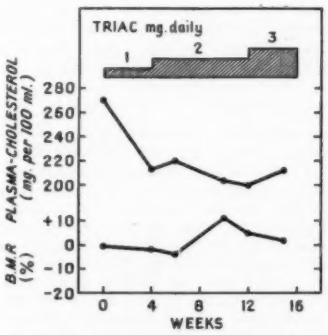


**Fig. 8—Effect of gradually increasing doses of triac on blood-cholesterol level and B.M.R. in a euthyroid patient (case 6).**

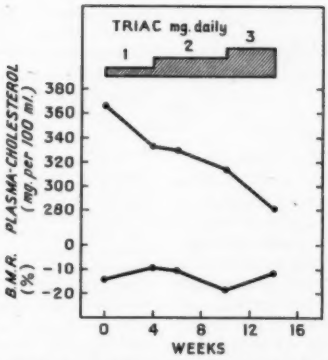


**Fig. 9—Effect of gradually increasing doses of triac on blood-cholesterol level and B.M.R. in a euthyroid patient (case 7).**

with triac showed a fall in the blood-cholesterol level. The mean drop in the blood-cholesterol level differed significantly from zero at the 1% level in the 2, 3 and 4 mg. groups. Analysis of variance showed that the degree of depression by the three different doses was not significantly different. The degree of depression produced by 0·08 mg. daily of triiodothyronine was not significantly different from that produced by triac. The present observations have therefore not shown any clear difference between the effect of triac and of triiodothyronine on the plasma-cholesterol level, though they do not exclude the possibility that such a difference would appear in more extensive trials.

Of the 15 patients given triac for two weeks only 1 complained of symptoms suggesting hyperthyroidism. This was a woman treated with 4 mg. daily. She noticed palpitations and was found to have lost weight and to have tachycardia. None of the 12 patients treated with triiodothyronine had any symptoms attributable to the drug. The mean weight loss in the triac group amounted to 2 lb.; the patients on the small dose of triiodothyronine lost 1 lb. and those on the large dose 4 lb.

## Discussion

In 2 cases of myxœdema the relative effect of triac and triiodothyronine on the blood-cholesterol level and the B.M.R. appeared to be similar. In a single case of myxœdema triac appeared to have a greater effect on the blood-cholesterol level, relative to the B.M.R., than did thyroxine. It is, however, possible that the results in this case may have been influenced by a change of diet or some other factor, since the patient was in hospital while taking triac, and at home while taking thyroxine. These preliminary trials have therefore not shown any unequivocal difference between the action of triac and of the other two hormones, except that triac is a great deal less potent.

TABLE II—EFFECT OF TWO WEEKS' TREATMENT ON BLOOD-CHOLESTEROL LEVEL OF EUTHYROID PATIENTS

| Drug | Dose (mg.) | No. of patients | Mean initial blood-cholesterol level (mg. per 100 ml.) and S.E. | Mean fall in blood-cholesterol level (mg. per 100 ml.) and S.E. | % change |
|---|---|---|---|---|---|
| Triac .. .. | 2 | 5 | 247·8 ± 20·1 | 83·6 ± 20·7 | 34 |
| Triac .. .. | 3 | 5 | 222·4 ± 21·8 | 44·6 ± 9·3 | 20 |
| Triac .. .. | 4 | 5 | 214·0 ± 13·3 | 49·2 ± 7·5 | 23 |
| Triiodothyronine | 0·04 | 7 | 245·1 ± 18·3 | 28·4 ± 10·0 | 12 |
| Triiodothyronine | 0·08 | 5 | 234·0 ± 14·6 | 49·8 ± 10·6 | 21 |
| Controls (dummy tablets) .. .. | .. | 4 | 189·3 ± 34·5 | 0·3 ± 8·5 | .. |

In 3 euthyroid subjects with coronary artery disease it appeared to be possible to lower the blood-cholesterol level without materially changing the B.M.R. These results were obtained by giving triac, but the evidence at present available does not exclude the possibility that equally striking effects might have been achieved with the other thyroid hormones in carefully graded doses. It is also possible that the fall in blood-cholesterol level was coincidental, since the trials have not as yet been controlled by observing the effect of discontinuing the drug. Other possibilities are that the fall in blood-cholesterol level is merely a temporary change, or that the initial values for the B.M.R. were erroneously high, thus masking a subsequent rise. In any case the small number of patients studied does not permit any generalisations to be made. For these reasons it cannot be claimed at present that triac has any properties not shared by the other thyroid hormones, or that it is likely to be particularly useful in lowering the blood-cholesterol level of euthyroid patients. Nevertheless these preliminary trials suggest that a detailed comparison of the effects of thyronine derivatives on blood-lipids and on the B.M.R. would be worth undertaking.

## Summary.

Triiodothyroacetic acid (triac) was given to 3 patients with myxœdema and 18 euthyroid patients.

Its relative effects in lowering the blood-cholesterol level and in raising the B.M.R. have been compared with those of thyroxine in 1 case of myxœdema. Triac appeared to have a relatively greater effect than thyroxine on the blood-cholesterol level.

A similar comparison with triiodothyronine was made in 2 other cases of myxœdema. In these cases the action of the two drugs appeared to be similar, but triiodothyronine was about seventy-five times more effective than triac as regards both depression of the blood-cholesterol level and elevation of B.M.R.

In euthyroid patients triac 2–4 mg. daily lowered the blood-cholesterol level by about a quarter. Triiodothyronine 0·08 mg. daily had a similar effect. In 3 patients whose dose of triac was increased gradually up to 3 or 4 mg. daily, there was no obvious rise in the B.M.R., although the plasma-cholesterol level appeared to fall.

Triac reduced the uptake of radioactive iodine in euthyroid patients, the dose required being about twenty-five times greater than the triiodothyronine. This observation is difficult to interpret quantitatively, owing to the relatively large amount of iodine which may be released during the breakdown of triac in the body.

I am deeply indebted to Dr. R. Pitt-Rivers for supplying both triac and triiodothyronine, Prof. M. Maizels and his staff for estimations of plasma-cholesterol, and the Sir Halley Stewart Trust for a personal grant.

### REFERENCES

Harington, C. R., Pitt-Rivers, R. (1952) *Biochem. J.* **50**, 438.
Lerman, J., Pitt-Rivers, R. (1955) *J. clin. Endocrin.* **15**, 653.
Morgans, M. E., Oldham, A. K., Trotter, W. R. (1952) *J. Endocrin.* **8**, 250.
Pitt-Rivers, R. (1953) *Lancet*, ii, 234.
Roche, J., Michel, R., Jouan, P., Wolf, W. (1955) *C.R. Acad. Sci.* **241**, 1880.
Sackett, G. E. (1925) *J. biol. Chem.* **64**, 203.
Thibault, O., Pitt-Rivers, R. (1955) *Lancet*, i, 285.
Trotter, W. R. (1955) *Ibid*, ii, 374.

# THE PHYSIOLOGICAL ACTIVITY OF TETRAIODOTHYROACETIC ACID

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THE acetic-acid analogues of thyroxine and triiodothyronine differ from the circulating thyroid hormones in that the alanine side-chain is replaced by acetic acid. The synthesis of tetraiodothyroacetic acid (tetrac) was described by Harington and Pitt-Rivers (1952). Pitt-Rivers (1953) compared the activity of tetrac and triac (triiodothyroacetic acid) in the prevention of thiouracil-induced goitres in rats and found that both possessed about a tenth of the activity of L-triiodothyronine. Thibault and Pitt-Rivers (1955) found that the acetic-acid analogues of both thyroxine and triiodothyronine were effective in raising the oxygen consumption of rat-kidney slices in vitro without a preincubation period, and that a single dose of tetrac raised the basal metabolic rate (B.M.R.) of thyroidectomised rats within two hours, the effect wearing off after four hours. Lerman and Pitt-Rivers (1955) described the effect in myxœdema of triac given daily by intravenous injection. Clinical improvement was accompanied by reduction in weight and plasma-cholesterol levels but no significant change in B.M.R. Trotter (1955) investigated the effect of triac in myxœdema and observed a clinical remission, with return of the B.M.R. and plasma-cholesterol to normal values on a daily oral dose of 6 mg.

It was therefore of interest to determine the potency of tetrac in myxœdema, with particular emphasis on its effect on the plasma-cholesterol level. A patient with primary untreated myxœdema was selected as a suitable subject for a therapeutic trial. A euthyroid volunteer was given tetrac in about the same dosage as the patient.

## Methods

Both the patient and the control were given tetrac orally as an aqueous solution or in a capsule (figs. 1 and 2). The solution was prepared by dissolving tetrac in sodium hydroxide (375 mg. per ml. of *N*NaOH), water being added to a final concentration of 4 mg. per 30 ml. The solution was kept refrigerated. The 2-mg. gelatin capsules were made up with a carbohydrate base. The B.M.R. was measured with a Benedict-Roth apparatus, the results being expressed as a percentage of average normal values according to Robertson and Reid (1952) standards. Serum-cholesterol was estimated by a modification of the method of Zlatkis et al. (1953). The therapeutic effect in myxœdema was assessed by clinical observation, the daily weight record, the plasma-cholesterol level, and the B.M.R.

## Case-report

A woman, aged 62, was admitted to hospital, after a street accident, with mild concussion and fractures of both forearms. After a month in hospital she was discharged to a convalescent home. During convalescence it was noted that she was myxœdematous, and she was admitted to hospital for investigation and treatment. She gave a history of rheumatic fever at the age of 19 and had been admitted to hospital in 1948 with mild congestive failure, which responded to the usual measures. Aortic stenosis and incompetence due to rheumatic carditis were then diagnosed. After the accident she developed intolerance of cold, lethargy, postural vertigo, constipation, dryness of the skin, muscular cramps, impairment of memory, and inability to concentrate. Her daughter noticed an alteration in her voice and mental retardation. She may have been hypothyroid for some time,

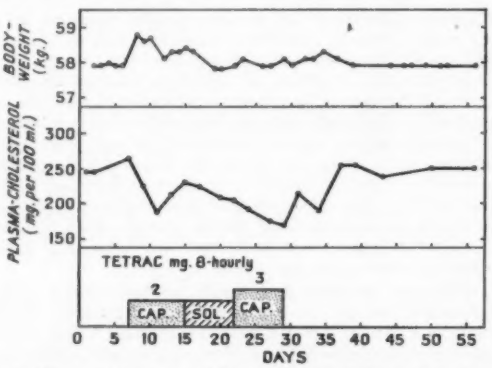


**Fig. 2—Effect of tetrac on weight and plasma-cholesterol level in a euthyroid subject.**

but it appeared that her condition had deteriorated considerably since the accident.

*On admission* she was lethargic and had a pale waxy complexion, thin hair, obvious puffiness of the eyelids, a deep voice, and dry scaly skin. Her thyroid gland was impalpable. There was evidence of aortic stenosis and incompetence but no sign of congestive failure except slight œdema of the ankles.

*Investigations.*—Chest radiography showed no cardiac enlargement. The initial B.M.R. was −17%. The serum-cholesterol level was 510 mg. per 100 ml. Electrocardiography showed ischæmic changes but no evidence of myxœdema. Radio-iodine studies of thyroid function showed no appreciable thyroid uptake at 48 hours. 96% of the dose being excreted in the first 48 hours. No protein-bound radio-iodine was detected in the plasma. Serum-electrolytes were within normal limits. The urinary excretion of 17-ketosteroids was 17 mg. per 24 hours. The amount of follicle-stimulating hormone was greater than 48 mouse units in 48 hours.

*Response to Treatment.*—Treatment with tetrac was started in a dosage of 1 mg. 8-hourly (fig. 1). No appreciable change was detected after 48 hours, when the dose was increased to 2 mg. 8-hourly. After 2–3 days on the larger dosage there was obvious improvement, which was maintained for 2 weeks, by which

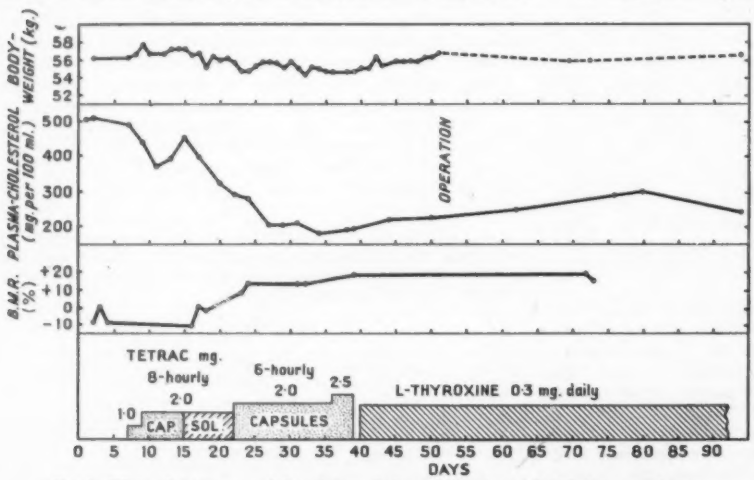


**Fig. 1—Effect of tetrac on weight, plasma-cholesterol level, and B.M.R. in myxœdema.**

EFFECT OF TETRAC ON PLASMA-CHOLESTEROL LEVEL OF A EUTHYROID SUBJECT

| Tetrac therapy | Date (1955) | Plasma-cholesterol (mg. per 100 ml.) |
|---|---|---|
| | Oct. 19 | 245 |
| | ,, 20 | 245 |
| 6 mg. daily .. .. | ,, 25 | 265 |
| | ,, 27 | 225 |
| | ,, 29 | 188 |
| | ,, 31 | 212 |
| | Nov. 2 | 230 |
| | ,, 4 | 224 |
| | ,, 6 | 208 |
| | ,, 8 | 205 |
| 9 mg. daily .. .. | ,, 9 | .. |
| | ,, 10 | 192 |
| | ,, 13 | 176 |
| Stopped .. .. .. | ,, 15 | 170 |
| | ,, 17 | 215 |
| | ,, 20 | 191 |
| | ,, 23 | 255 |
| | ,, 25 | 255 |
| | ,, 29 | 238 |
| | Dec. 6 | 250 |
| | ,, 12 | 250 |

time the B.M.R. and the serum-cholesterol level had returned to normal values, although the patient was not yet clinically euthyroid. The dosage was increased to 2 mg. 6-hourly; further improvement took place within 48 hours, and the patient became clinically euthyroid after two weeks on this dosage. The dosage was increased to 2·5 mg. 6-hourly for 4 days, with slight further subjective improvement. At this stage L-thyroxine 0·3 mg. daily was substituted for tetrac. A bone graft for an ununited fracture of the ulna was performed before she was finally discharged from hospital six weeks after the start of L-thyroxine therapy. Although she showed only a slight tendency to relapse when tetrac was discontinued, there was a delay of two months before the full therapeutic response to thyroxine was obtained. The operation may have been partly responsible for the delayed response.

### Effect of Tetrac in Euthyroid Subject

Tetrac was given in a dosage of 2 mg. 8-hourly for 16 days, after which the dose was increased to 3 mg. 8-hourly for a further 6 days. A sensation of warmth was experienced about half an hour after the dose, except when it was given in a capsule. There was no change in the peripheral circulation, and no other symptoms except intermittent headaches were noted. The body-weight remained constant throughout the period of observation except for a transient increase during the initial 48 hours, and no change in pulse-rate or blood-pressure was noted. The withdrawal of tetrac gave rise to general malaise, which lasted about a week, and persistent headaches. The plasma-cholesterol level was significantly depressed from an initial mean value of 250 mg. per 100 ml. to 170 mg. per 100 ml. and returned to its original value a week after tetrac was stopped. The values are given in the accompanying table.

### Discussion

A patient with myxœdema was given tetrac in gradually increasing doses and became euthyroid on a dose of 8 mg. daily. No attempt to assess the effect of a single intravenous dose was made, because of the previous history of cardiac failure and the unknown potency of this substance. It was to be expected that tetrac would have a rapid metabolic action in myxœdema because a single dose raised the metabolic rate of thyroidectomised rats within two hours (Thibault and Pitt-Rivers 1955). A therapeutic response after each increment in the dose was observed within about 48 hours. It is unlikely that any sudden change in thyroid status would have been detected with thyroxine given in comparable dosage. The absence of a latent period of action implies a rapid rate of degradation, and preliminary observations with $^{131}$I-labelled tetrac indicate that the disappearance-rate from plasma may exceed that of triiodothyronine. If these observations are confirmed, it may be assumed that equilibrium would soon be reached in response to any alteration in the administered dose, and on the basis of the results obtained in this patient 8–10 mg. of tetrac is equivalent to 0·3 mg. of L-thyroxine. The potency of tetrac in myxœdema is therefore about a thirtieth of that of L-thyroxine.

The effect of tetrac on the plasma-cholesterol level of a euthyroid subject is of some interest. Strisower et al. (1954) have investigated the depression of the plasma-cholesterol level in response to the administration of thyroid hormone. They found a significant fall in the plasma-cholesterol level of four healthy people given gr. 3 of thyroid extract (*U.S.P.*) daily for 2–3 weeks. It is surprising that the plasma-cholesterol level fell on a dose of tetrac which appears to be less than that required for replacement therapy.

It was thought worthwhile to observe whether another quick-acting thyroxine analogue affected the plasma-cholesterol level of euthyroid people in a similar way. There was no apparent alteration in two such people given triiodothyronine 0·06 mg. daily for 10 days; and, when the dosage was increased to 0·12 mg. daily for a further week, no significant depression of the plasma-cholesterol level was found, although toxic symptoms developed at this level (I. J. L. Goldberg, and A. W. G. Goolden, unpublished). The effect of tetrac on the plasma-cholesterol level in other conditions associated with hypercholesterolæmia is being further investigated.

### Summary

A patient with myxœdema was given tetrac orally in gradually increasing doses. The plasma-cholesterol level and the B.M.R. reverted to normal, and a clinical remission was obtained on a dose of 8 mg. daily. The latent period of action appeared to be short. On the results obtained in this patient it is estimated that the potency of tetrac is about a thirtieth of that of L-thyroxine.

A euthyroid subject was given tetrac in about the same dosage as the patient. A significant fall of the plasma-cholesterol took place on a dosage less than that required for replacement therapy.

I am indebted to Dr. R. Pitt-Rivers, F.R.S., of the National Institute of Medical Research, for the supply of tetrac, and to Dr. I. G. Gilliland, of the Postgraduate Medical School of London, for permission to treat his patient. I wish to thank the personnel of the 7520 U.S.A.F. Clinical Laboratory for plasma-cholesterol estimations, and Miss Judith Chambers for B.M.R. estimations.

### REFERENCES

Harington, C. R., Pitt-Rivers, R. (1952) *Biochem. J.* **50**, 438.
Lerman, J., Pitt-Rivers, R. (1955) *J. clin. Endocrin.* **15**, 653.
Pitt-Rivers, R. (1953) *Lancet*, ii, 234.
Robertson, J. D., Reid, D. D. (1952) *Ibid*, i, 940.
Strisower, B., Gofman, J. W., Galioni, E. F., Almada, A. A., Simon, A. (1954) *Metabolism*, **3**, 218.
Thibault, O., Pitt-Rivers, R. (1955) *Lancet*, i, 285.
Trotter, W. R. (1955) *Ibid*, ii, 374.
Zlatkis, A., Zak, B., Boyle, A. J. (1953) *J. Lab. clin. Med.* **41**, 486.

"... It is interesting to consider how much warmer a family environment the working class baby enjoys in this country, compared with an infant in a better class home. The one lives in the centre of the kitchen, which is the centre of family life, and is rarely left alone; ... in nine cases out of ten he ... spends the interval from the 6 p.m. to 10 p.m. feeds, being nursed and played with, handed round the family circle ... If mother is ill, or expecting another infant, father frequently takes a week off work and looks after the family. In the better class home, 6 p.m. is a sacred hour at which the infants must be placed in their cots upstairs, after a day spent lying in the garden contemplating the trees, with a brief play-time after tea. Father rarely sees his infant, for his hours are long and his work responsible: he expects to be free to spend his evenings in cultural pursuits beyond the scope of the young. If mother is ill, help has to be hired or acquired in some way, as it never even occurs to the father to put his duty to his family before his duty to the community."—Dr. BEATRICE WATTS, *College of General Practitioners Research Newsletter* no. 11. May, 1956.

# CARDIAC PAIN FROM ŒSOPHAGEAL LESIONS

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IN his St. Cyres lecture Dr. William Evans drew attention to the association between œsophageal contraction of an abnormal type and cardiac pain (Evans 1952). He found that pain suggesting coronary disease was present in 332 patients, all of whom had a normal electrocardiogram. They were contrasted with an adequate control series. He found that in some cases the pain could mimic that of angina of effort and in others that of myocardial infarction. Two of his points, particularly worthy of clinical comment, were :

(1) The frequency with which such patients summoned medical aid, and the corresponding frequency of the diagnosis of coronary thrombosis, for which morphine was given.

(2) That in 83 cases there were long intervals of freedom from pain—in 34 cases lasting up to two years, and in 49 for more than two years.

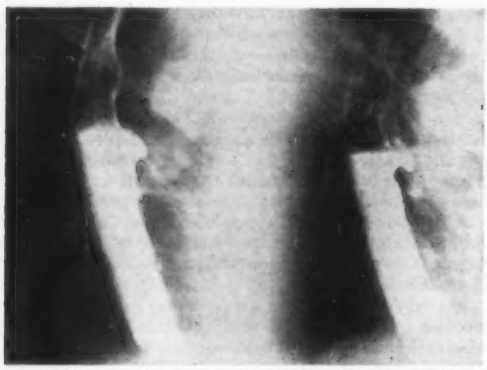


**Fig. 1—Case 1 : diverticulum in middle third of œsophagus.**

Other observers have described cases in which pain suggesting coronary disease was present, the apparent cause being an abnormality of the œsophagus.

Moersch and Camp (1934) found pain characteristic of angina pectoris in 2 patients with œsophageal spasm.

Wolferth and Edeiken (1942) believed that many of the seizures thought to be due to angina pectoris were really caused by œsophageal spasm.

Harrison (1945) reported 35 cases of œsophageal disease in which the pain resembled that of coronary disease, but in these patients he did not notice a relation between physical exercise and pain.

Many other observers have stated that hiatus hernia can produce chest pain similar to that of coronary disease (Jackson and Jackson 1936, Jones 1941, Jones and Chapman 1942, Herman and Singer 1946).

The following is an account of two patients with organic œsophageal abnormalities who suffered from pain. In one the pain resembled that of myocardial infarction ; in the other it resembled angina of effort.

## Case-reports

**Case 1.**—A man, aged 54, was admitted to St. Bartholomew's Hospital after having a sudden attack of pain in the chest at the level of the upper part of the sternum, whence it radiated down the left arm and up into the neck.

*On admission* he was given morphine, which relieved the pain. He was not shocked. His blood-pressure was 120/80 mm. Hg. There was no evidence of increased venous pressure in the neck. The heart sounds were normal, and nothing abnormal was found in the abdominal organs, limbs, and nervous system.

*Treatment and Progress.*—Later in the day he had another, exactly similar, attack, and two days later he had several more. All were relieved by morphine. His white-cell count three days after the first attack was 5500 per c.mm., and erythrocyte-sedimentation rate (E.S.R.) 25 mm. in the first hour (Westergren). The electrocardiogram was normal except for slight changes in the QRS in lead VL only, but such changes were thought to be possibly within normal postural limits. He was discharged and returned to his work, and he remained perfectly well for two years.

*Readmission.*—He was then admitted as an emergency case, having again developed severe gripping retrosternal pain radiating to the left side of the thorax. He was perspiring, nauseated, and shocked. Again no noteworthy abnormality was found in the heart or elsewhere. The blood-pressure was 110/95. The E.S.R. was 16 mm. in one hour and remained raised for two weeks.

*Treatment and Course.*—During this second admission he had seven further attacks in eight days, all of them requiring relief with amidone. They lasted an hour or more—considerably longer than the average attack of anginal pain. The electrocardiogram still remained within normal limits except for the very minor changes previously noted in lead VL : it showed no evidence of myocardial infarction in the standard leads, the unipolar limb leads, or the unipolar precordial leads $V_1$, $V_2$, $V_5$, $V_7$.

*Diagnosis.*—Although on his first admission the diagnosis had been coronary thrombosis, suspicion was aroused during the second admission by the normal electrocardiogram and by the normal size and shape of the heart—which was, indeed, small for his physique. The transverse diameters of the heart and thorax respectively on the 6-foot X-ray film were 10·5 cm. and 25·5 cm.

In view of these facts, and because it had been noticed that from time to time he swallowed air, the œsophagus became suspect. On radiography a diverticulum of its middle third was found (fig. 1). The stomach and duodenum were normal.

The family history and the past history contained no point which appeared to be of importance.

**Case 2.**—A man, aged 67, had for three or four years suffered from pain in the chest, radiating to both sides but not to the arms or to the neck. It was induced by hurrying and by climbing hills or stairs, and it was not associated with shortness of breath. It lasted two or three minutes and was generally more severe in the morning. Clinically it was strongly suggestive of typical angina of effort due to myocardial ischæmia from coronary disease.

On examination his heart-rate was 86, the rhythm being regular, and his blood-pressure was 184/100. The heart, lungs, and abdominal organs were clinically normal. Radiologically the heart was small (10·4 cm. in diameter) and vertical ; the lung fields suggested emphysema. The electrocardiogram, after considerable exercise, remained normal in the standard leads, the unipolar limb leads, and the unipolar precordial leads $V_1$, $V_2$, $V_5$, $V_7$.

On radiography the œsophagus showed a sliding hiatus hernia (fig. 2), but with very little gastro-œsophageal reflux.

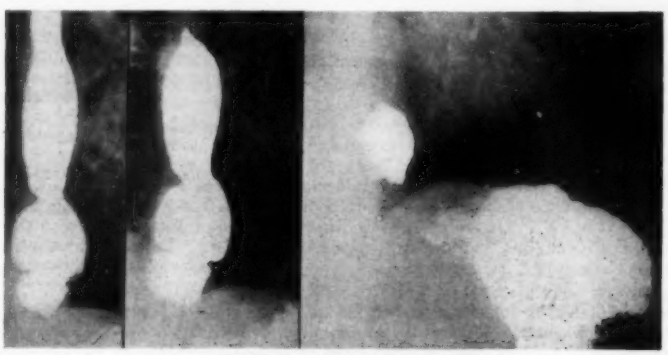


**Fig 2—Case 2 : hiatus hernia.**

There was also some irregularity of function of his stomach, probably due to the hiatus hernia.

The past history and the family history were both negative.

### Comments

These two cases are put on record to draw attention to the necessity for a full investigation of the œsophagus when pain, which clinically appears attributable to coronary disease, is not associated with any other abnormality, whether clinical, electrocardiographic, or radiological.

The proof that in these two cases the pain was œsophageal and not coronary in origin is wanting. On the other hand, proof that the pain was coronary is equally wanting. Definite knowledge could be obtained only by necropsy, and if the symptoms were in fact due to the œsophageal lesions, it is likely to be unobtainable for many years. What is certain is that in each case there was an organic œsophageal abnormality; and we know that "anginal" pain can be a manifestation of œsophageal disorder.

The œsophageal condition should be treated by advice about the proper mastication of food, by a low-residue diet, by prescribing aluminium hydroxide or bismuth before meals, and belladonna in full doses, and by raising the head of the bed on nine-inch blocks. The complete disappearance of symptoms after such treatment would argue for an œsophageal rather than a coronary origin.

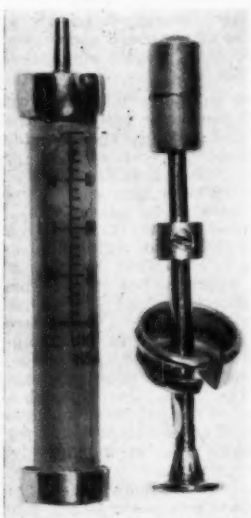

REFERENCES

Evans, W. (1952) *Lancet*, ii, 1091.
Harrison, T. R. (1945) *Amer. J. med. Sci.* **209**, 765, 771.
Herman, M., Singer, E. (1946) *N.Y. St. J. Med.* **46**, 1020.
Jackson, D. E., Jackson, H. L. (1936) *J. Lab. clin. Med.* **21**, 993.
Jones, C. M. (1941) *New Engl. J. Med.* **225**, 963.
— Chapman, W. P. (1942) *Trans. Ass. Amer. Phycns*, **57**, 139.
Moersch, H. J., Camp, J. D. (1934) *Ann. Otol. &c., St. Louis*, **43**, 1165.
Wolferth, C. C., Edelken, J. (1942) *Penn. med. J.* **45**, 579.


## New Inventions

### A CHEAP SYRINGE STOP

THERE has long been a need for a cheap and convenient syringe which can be used safely by those with poor eyesight and others who are incapable of drawing accurately up a solution into a syringe.



The adjustable syringe stop illustrated appears to meet these requirements. It consists of a plated brass collar with a grub-screw. The collar can be slipped on to the plunger of any glass-metal syringe and fixed in a chosen position with a screwdriver.

Its advantages are that the collar cannot be moved accidentally but is nevertheless easily adjustable by the simple expedient of loosening the grub-screw. A syringe fitted with such a collar is cheaper than any other stopped syringe on the market; the collar can be made for a few pence and, if the syringe breaks, can be transferred to any other glass-metal syringe.

The collar was made for me and is obtainable from Messrs. Whitelaws, 44, Great North Road, Newcastle upon Tyne. I am very grateful to Dr. C. C. Ungley and Dr. R. E. Irvine for their help and encouragement.


Royal Victoria Infirmary, Newcastle upon Tyne

P. W. R. M. ALBERTI
Medical student


## Reviews of Books

### The Practice of Medicine

JOHN S. RICHARDSON, M.V.O., M.D., F.R.C.P., physician, St. Thomas's Hospital, London. London: J. & A. Churchill. 1956. Pp. 1076. 40*s*.

MANY students, if asked what they seek most in a textbook of medicine, would probably say, clarity and brevity; and they might add that if the writing could have interest as well, so much the better. One virtue which students seldom seem to call for, and perhaps rarely feel the need for until they have qualified, is attention to detail and the avoidance of vague generalisations. Unfortunately, examiners sometimes have a tiresome habit of asking meticulous questions which require exact answers; and the new text which Dr. Richardson has edited will arm students against such questions, besides appealing to them on other grounds as well.

It is written by fourteen contributors, of whom half are teachers at St. Thomas's Hospital, and all may fairly be regarded as belonging to the younger school. The writing throughout is clear and up to date. There is no padding and for the most part the teaching is firm and authoritative: indeed, in places, it may be too brief, and of necessity some subjects receive rather scant mention.

It is perhaps significant of our times that psychiatry occupies some 150 pages, while dermatology is omitted as a special subject and the alimentary tract receives only 15 pages—which have a rather defeatist and "passed-to-you" attitude towards such mainly surgical conditions as carcinoma of the œsophagus and colon. The constructive and even optimistic 10 pages and 8 illustrations on occupational diseases of the lungs are remarkably well done. There is an excellent short chapter on tropical diseases, and the up-to-date sections on allergy, collagen diseases, and venereal diseases are also prominent.

The index is good and there are useful appendices on, for example, diets, and normal laboratory values. It is a notable achievement to produce a book of this size at this price.

The authors have not hesitated to express themselves forcibly and it is refreshing to find almost throughout a brisk and practical attitude, with here and there a spark of humour, and a refusal to offer those unconvincing explanations which tend to get perpetuated from textbook to textbook. This is a book which undergraduates will find much to their liking.

### Counseling in Medical Genetics

SHELDON C. REED, director, Dight Institute for Human Genetics, University of Minnesota. Philadelphia and London: W. B. Saunders. 1955. Pp. 268. 28*s*.

THE Dight Institute of the University of Minnesota was one of the earliest departments to establish a clinic for advising would-be parents on the risks to their children. Like some other American genetic counsellors, Dr. Reed was trained as a geneticist and is not himself medically qualified. Over the course of years, however, he has accumulated considerable clinical experience of the medical conditions in which genetic factors are important, and he has the help of a clinical colleague.

In this book he aims to show doctors and the lay public something of the scope of genetic counselling. There is an excellent chapter on the philosophy of counselling. In common with those doing similar work in America and this country, Dr. Reed's practice is never to make decisions for his patients, but to advise them as precisely as possible on the risks, and at the same time to put the matter into perspective for them. The actual conditions he considers in detail are all common ones, for which in his experience parents often seek advice—mental defect, psychosis, and some of the congenital malformations. Some illustrative case-histories are given at the end of each chapter. Information on the rarer conditions is given in an appendix, which is taken from a recent paper by Dr. F. C. Fraser, of Montreal.

This is not intended to be a textbook; and anyone wanting information on a particular condition, with no

easy access to a clinic, should refer to one of the original papers, which are listed in the book or can be found from Dr. Fraser's paper. This caution applies particularly in one or two instances where Dr. Reed has used a method of arriving at the risks which is of doubtful validity, and has led him to quote too high a risk—for example, for harelip. In this instance a better estimate is given in the appendix. But in general the book is stimulating and should well fulfil its purpose of indicating when advice on genetic risks can be helpful to parents.

### Medical History of the Second World War

*Royal Air Force Medical Services.* Vol. II: Commands. Edited by Squadron-Leader S. C. REXFORD-WELCH, M.B.C.S., R.A.F. H.M. Stationery Office. 1955. Pp. 703. 75*s*.

THIS volume describes clearly, and at times dramatically, how wide was the range of duty which fell to the medical branch of the R.A.F. The estimation of flying stress and its relation to courage, the choice of rations for crews on long flights or in escape dinghies, the supervision of the early parachute troops, the industrial hazards of some of the maintenance work—these were some of the problems thrust on doctors as an addition to routine public health and care of the sick. The story is extremely well set out, with detail enough to present a tale worth reading, and it does not shirk the difficult matter of the relationship of the medical officer with the executive officer.

Planning had to be, and was, adjusted to unforeseen changes in the pattern of warfare. The accounts of the expeditions to the Azores and to Iceland are both fully elaborated: both contain lessons of general application to any military exploit, whatever the weapons used. Though the book is long, it is hard to see how it could have been made much shorter without losing its value as a textbook and guide for doctors who choose or are called on to undertake medical duties in a fighting service.

### The Cornea

CHARLES I. THOMAS, M.D., associate clinical professor of ophthalmology, department of surgery, Western Reserve University School of Medicine. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1955. Pp. 1318. £10 15*s*.

MUCH industry, ingenuity, and thought have gone into this comprehensive book. It is an admirable achievement to correlate, as far as is at present possible, such a large mass of scientific and clinical data. There must be little in the enormous literature on the subject of the cornea which has escaped attention.

For the scientist there is particular interest in the chapters dealing with embryology, anatomy, physiology, and pathology of the cornea, and for the clinician there is valuable instruction in the chapters on diseases of the cornea. The difficult subject of corneal dystrophies is especially well treated.

The author has not made clear Paufique's technique for dealing with a broad synechia before a corneal transplant. The reader is left with the impression that this is done at the same time as the keratoplasty and by using an 8–9 mm. trephine, which is not the case. Not all surgeons would agree with the use of ointment in the conjunctival sac at the end of a penetrating corneal transplant operation, and many surgeons would prepare the donor material before the recipient site. Most of the illustrations, photographs, artist's drawings, and diagrams are excellent; but a few photographs are indistinct.

This is a book to which all ophthalmologists and those interested in the basic sciences of ophthalmology will wish to refer.

### Heaven and Hell

ALDOUS HUXLEY. London: Chatto & Windus. 1956. Pp. 88. 7*s*. 6*d*.

TWO years ago, in *The Doors of Perception*, Aldous Huxley described his subjective experiences after taking a dose of mescaline. He was an experimental subject who was exceptionally well qualified to communicate the nuances of this peculiar intoxication, which is of medical interest because of its relationship with other forms of hallucinosis. He was, if anything, too eloquent. His insistence on the transcendent qualities of his perceptions became in the end reminiscent of a neurotic patient's exaggeration of his symptoms. Finally, it seemed that it was not the effects of mescaline but rather the exquisite sensibilities of the author that were being demonstrated to the reader.

In this sequel to that essay, he offers his reflections upon the psychological implications of the mescaline experience. It is soon made plain that his temperament is antipathetic to any scientific assessment of the phenomena. Instead, speculation and metaphor are interwoven with fragments of physiological data in order to construct a plausible fiction, in a manner reminiscent of D. H. Lawrence's *Fantasia of the Unconscious*. Systematic observation and verification are alien to this approach, and yet he does throw out perceptive insights such as: "Colour turns out to be a kind of touchstone of reality."

As a contribution to the phenomenological study of the *fantastica*, this essay must itself be regarded as a potent stimulant—to be taken with a pinch of nicotinic acid.

### Progress in Clinical Obstetrics and Gynæcology

T. L. T. LEWIS, F.R.C.S., M.R.C.O.G., obstetric surgeon, Guy's Hospital; surgeon, Queen Charlotte's Maternity Hospital. London: J. & A. Churchill. 1956. Pp. 594. 55*s*.

WRITTEN for the specialist who has not been able to keep up with the vast literature, and for the post-graduate student who is reading for the M.R.C.O.G. examination, this book tackles many difficult and debatable matters.

For example, there are chapters on congenital malformation and rubella, postmaturity, postpartum hæmorrhage and the management of the third stage, and of afibrinogenæmia and amniotic-fluid embolism. In the gynæcological section Mr. Lewis deals, among other things, with stress incontinence, venous thrombosis and pulmonary embolism, cytology in uterine cancer, and pelvic exenteration. The subjects have been well chosen, and each is thoroughly discussed.

The author says he has "tried to present the evidence without prejudice before drawing conclusions," and he has succeeded admirably. His book is well written and contains much wisdom.

### Final Contributions to the Problems and Methods of Psycho-analysis

SANDOR FERENCZI, M.D. Editor: MICHAEL BALINT, M.D., PH.D., M.SC. Translators: ERIC MOSBACHER and others. London: Hogarth Press and the Institute of Psycho-Analysis. 1955. Pp. 447. 30*s*.

PSYCHO-ANALYSTS are tireless in their bibliographical labours: they gather, and if necessary translate, the whole corpus of published writings by the notable pioneers. This is the third volume of Ferenczi's literary remains. There is a hint in the preface that his scientific diary and the correspondence between him and Freud over a period of 25 years are also to be issued in due course. The papers here presented include those written between 1926 and his death in 1933, and various notes, fragments, and minor articles. The most interesting are those written after 1927 in which he put forward his heterodox proposals about relaxation and indulgence (*Nachgebigkeit*) in therapeutic technique. There are throughout the volume, and especially in the fragmentary notes, intimations of Ferenczi's intuitive, fertile, and sometimes startling approach to the problems that he saw in psycho-analysis. The book also contains a complete bibliography of those of his papers that have been translated into English, and an elaborate index for which the explanatory notes alone take up a page.

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**Bacterial Anatomy** (London: Cambridge University Press. 1956. Pp. 360. 30*s*.).—The fifteen papers which were discussed at the sixth symposium of the Society for Microbiology were published shortly before the meeting last April, so that members might consider them in advance. Under the editorship of Prof. E. T. C. Spooner and Dr. B. A. D. Stocker, and supplemented by some excellent plates, they make a handsome volume which will also be an informative consolation prize to non-attenders.

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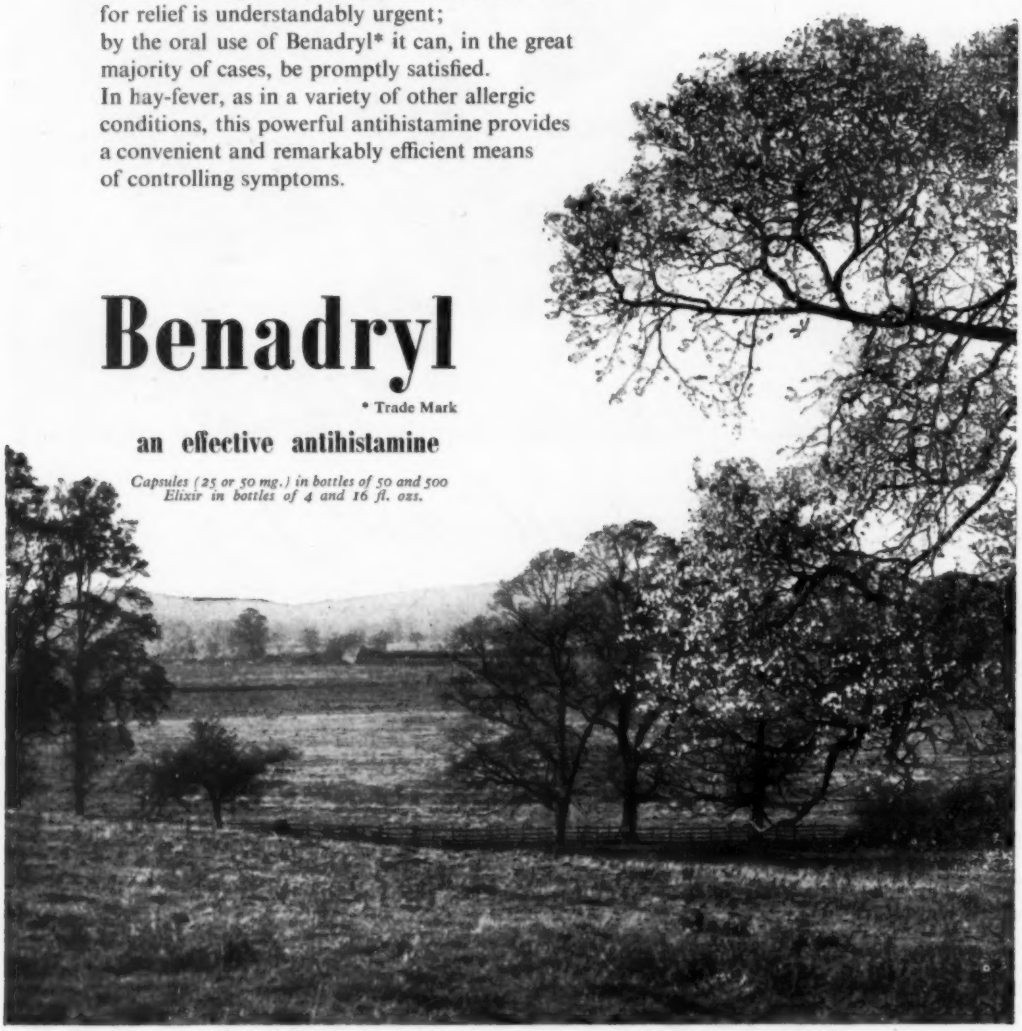

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485

# THE LANCET

*LONDON: SATURDAY, JUNE 9, 1956*


## The Millers Decide

"IN this country," said the Medical Research Council conference, "bread is the largest and most important single item of the diet, providing between one-fifth and one-third of the calories and protein and a high proportion of other essential nutrients." As a protective food, bread is particularly valuable to people who cannot afford a good mixed diet, and therefore to children of large families. Hence a reduction in the nutritional value of bread may have consequences which, though not readily perceptible, are none the less grave; and in authorising such a reduction the Government risk damage to the public health. The decision by which they are now abandoning 80%-extraction National flour in favour of "enriched" or "fortified" flours of a lower extraction has the backing of a highly expert panel,[1] but it is contrary to the opinion of their own medical advisers and of the M.R.C. conference whose evidence we publish on p. 901. Moreover, the scientific weight to be attached to the panel's conclusions is lessened because these seem to be based on administrative rather than purely nutritional considerations—on what the panel thinks practicable rather than what it thinks desirable. The report was in fact written in the knowledge that the flour-millers are determined that bread shall be white, and have already abolished National flour by quietly altering the composition of what is sold under that name. The extraction-rate of National flour has already come down generally from the 80% (or its equivalent) specified under the Flour Order 1953 to about 74%; for enforcement of the order has been prevented by the need to allow a wide range of variation in the vitamin content of high-extraction flour—which makes it very hard to prove that a particular batch is at fault. In face of the "continuing fall" in the vitamin-$B_1$ and nicotinic-acid content of National flour since decontrol, which it attributes primarily to "deliberate disregard of the intention of the Flour Order," the panel evidently feels that we should cease to bother about extraction-rates (which only the millers can control) and should make sure, by enforceable regulation, that they enrich their white flour with at any rate the three "token nutrients"—iron, nicotinic acid, and vitamin $B_1$. The national policy of high extraction—adopted on grounds both of economy and health—is to be replaced by a weaker policy of fortification. The millers have virtually settled the matter for themselves—though it must be pleasant for them to have the Government's approval.

The degree of freedom that ought to be allowed to the man who processes and distributes food is going to need further thought. On the one hand, the public often has to thank him for making his product convenient, cheap, and readily transportable; but on the other hand there is no doubt that these qualities assume a higher place in his calculations than the damage he may be doing to the nutritional value of the food. The flour-millers, for example, have earned respect by their enterprise and many of their services to the nation; but from the standpoint of the nutritionist their treatment of bread has been irresponsible. To nutritionist and layman alike, it seems obvious that before someone, for reasons of convenience, alters the character of a staple food, the onus lies on him to show that the change at least does no harm; but it sometimes seems as though the modern food-processor thinks himself entitled to do what he likes with his product—after which the onus lies on someone else to prove his process dangerous or damaging. At the time when the flour-millers first produced their chemically treated low-extraction white flour, they were not alone in the illusion that this was a genuinely superior product; but it is harder to forgive the tenacity with which they have stuck to their original mistake, and have resisted efforts to make their flour safer and more nutritious. The onus rested chiefly on Sir EDWARD MELLANBY, they felt, to show good cause why they should not continue to use a flour-improver, agene, which causes fits in dogs; and though he won at last a posthumous victory, and the use of agene was forbidden, we do not know how confidently we can rely on the substitutes now in use. In the late 1930s, after the worst period of unemployment, it had become clear that impoverishment of the flour had harmfully reduced its content of vitamin $B_1$; and its enrichment with this particular vitamin was proposed. As a further concession, it later had to be admitted that people relying on the 72%-extraction flour which was current before the war might be missing some of the iron or nicotinic acid they needed from their bread: so these have now been added. And no doubt, as knowledge grows, and the millers are gradually shifted from their positions, we shall be allowed further instalments of the nutrients which they have removed.

The expert panel's report sets out the arguments very ably and burkes none of the issues. Why then should it come down on the side of supplying the public, henceforward, with fortified white bread? First, perhaps, because the panel was too ready to believe that the public (as well as the bakers and the millers) are eager for low-extraction flour. Secondly, because the panel thought the industry possibly right in saying that if people can obtain only bread made from 80%-extraction flour they will eat less bread and more of other manufactured foods which may be less nourishing. Thirdly, because, with fortification, we know just where we are: a true 80%-extraction flour may give a more widely spread insurance against possible, but as yet unproved, deficiency in the diet, but the 70%-extraction enriched flour "gives a more *certain* cover against possible deficiency of the three 'token' nutrients with well recognised deficiency states." These are substantial reasons; and so is the fact that the millers have virtually ignored the Flour Order and cannot easily be made to obey it. Yet with all respect we say that the panel has given the wrong advice. As a result of that advice, bread is to be slightly more reliable as a source of iron, vitamin $B_1$, and nicotinic acid; but it will contain less of certain

1. Report of the Panel on Composition and Nutritive Value of Flour. Cmd. 9757. H.M. Stationery Office, 1956. See *Lancet*, May 26, 1956, p. 800. The members of the panel were: Sir Henry Cohen, F.R.C.P. (chairman); Prof. A. C. Chibnall, F.R.S.; Prof. J. H. Gaddum, M.R.C.S., F.R.S.; Prof. R. A. Morton, F.R.S.; and Prof. L. J. Witts, F.R.C.P.

other nutrients, such as pyridoxine, pantothenic acid, biotin, and folic acid, whose full importance may not yet be apparent. If we did not know that very small nutritional deficiencies (conditioned or otherwise) can have very great effects, and if we were quite sure that none of the current disorders of civilised man can possibly have a nutritional origin, we might be happier about the panel's implication that what is unproven can be (fairly) safely ignored. Admittedly it reaches its conclusions after the proper hesitations —" the history of nutrition reveals many instances where the refinement or over-purification of food has led to ill-health and there is no reason to believe that this chapter of knowledge is closed "—but this does not lessen our doubts about the conclusions themselves. When the panel says that a lowering of the extraction-rate from 80% to 70% is *very unlikely* to lead to any nutritional disturbance from lack of pyridoxine, pantothenic acid, biotin, and folic acid, and that there is no ascertainable difference between National flour and fortified flour which would *significantly* affect the health of the population " in any foreseeable circumstances," it is making guesses that embody risks ; and these are risks that are going to be multiplied by 50 million. Even in the more limited " present circumstance " to which the Minister of Agriculture confines his own statement,[2] bread is probably becoming perforce an increasingly prominent part of the diet of many people in this country ; and their number may rapidly increase. We share the view of the M.R.C. conference that, though the new policy may not lead to an increase in recognisable illness, it carries a risk that can be avoided.

As things stand there is every prospect of the nation returning to the familiar situation in which people receive what it suits the millers to give them.

## Thyroid Hormones and Coronary Disease

NOT long ago, coronary-artery disease was regarded as an inevitable accompaniment of the process of growing old, which there was no prospect of averting. In recent years a remarkable change has come over our attitude to this condition, and many people now regard it as something which could be corrected if enough was known about its cause. We have lately referred to some of the reasons for this change of attitude.[3] If further investigation shows that high blood-cholesterol levels do in fact predispose to thrombosis with or without atheroma, various means of avoiding excessive cholesteræmia may prove practicable. One would be to lower the total fat content of the diet, or the proportion of different kinds of fats. Another which has been proposed is the administration of sitosterol, a plant steroid which interferes with the absorption of cholesterol,[4] though only when taken in inconveniently large quantities. Another possible line of attack is hormonal. It is well established that coronary-artery disease is less prevalent in women than in men, particularly at the younger ages, and administration of œstrogens lowers the blood-cholesterol.[5] Similarly, TURNER and STEINER [6] showed that thyroid extract lowered the blood-cholesterol level of euthyroid subjects, though it also raised the basal metabolic rate (B.M.R.) by an average of 20%. GILDEA et al.[7] made similar observations in patients with hypometabolism but no signs of myxœdema ; again, a fall in blood-cholesterol was accompanied by a rise in B.M.R. They noted, however, that larger doses of thyroid extract were needed to lower the blood-cholesterol of euthyroid subjects than was the case in patients with myxœdema. STRISKOWER, GOFMAN, and others [8 9] have recently shown that large doses of thyroid extract given to schizophrenics lowered not only the total blood-cholesterol but also the lipoprotein fractions which they regard as particularly associated with atheroma. The patients' B.M.R.s were not measured, but they lost weight. Thyroid extract clearly changes the blood-lipoprotein pattern in the right direction, but only at the expense of an increase in general metabolism. This increased metabolism is a disadvantage, in that it is likely to make the patient uncomfortable ; and it might also be dangerous in a person whose coronary arteries are already narrowed, for it must necessarily increase the work of the heart, and therefore the amount of blood which must be carried by the coronaries.

The hormone secreted by the thyroid is thought to consist mainly of thyroxine ; in addition, triiodothyronine is also either made by the gland or formed elsewhere from thyroxine. These two substances are supposed to have similar physiological actions, though triiodothyronine is the more powerful. Numerous synthetic variants of these two substances are also known, many of which are physiologically active in varying degrees. It has been presumed that the difference in the physiological activity of these substances were purely quantitative. But now it is suggested, in papers by Dr. TROTTER and Dr. GOOLDEN in this issue, that there may be qualitative differences between the various chemical versions of the thyroid hormone. Just as changes in the chemical structure of the adrenal cortical hormones increase the relative effects on either glucose or mineral metabolism, so alterations in the thyroxine molecule may emphasise either the cholesterol-depressing or the metabolic effects of the thyroid hormone. As it happens, both Dr. TROTTER and Dr. GOOLDEN deal with the same modification of the molecule whereby the tyrosine side-chain is replaced by acetic acid. Dr. GOOLDEN's substance is the acetic-acid analogue of thyroxine (tetrac), while Dr. TROTTER's is the acetic-acid analogue of triiodothyronine (triac). Both substances originated in Mrs. PITT-RIVERS's laboratory at the National Institute for Medical Research, where their physiological properties are being closely studied.

It is evident that in their action in man the new compounds do not differ radically from their parent substances. Both will relieve the symptoms of myxœdema, at the same time restoring B.M.R. and blood-cholesterol to normal. The action of both substances is more rapid than that of thyroxine, though not necessarily more rapid than that of triiodothyronine. The main point of interest is that both Dr. TROTTER and Dr. GOOLDEN suggest, though only tentatively, that the acetic-acid analogues may

2. *Hansard*, May 17, 1956, col. *186*.
3. *Lancet*, 1955, ii, 1123 ; *Ibid*, April 28, 1956, p. 557.
4. Barber, J. M., Grant, A. P. *Brit. Heart J.* 1955, **17**, 296.
5. Russ, E. M., Elder, H. A., Barr, D. P. *Amer. J. Med.* 1955, **19**, 4.
6. Turner, K. B., Steiner, A. *J. clin. Invest.* 1939, **18**, 45.
7. Gildea, E. F., Man, E. B., Peters, J. P. *Ibid*, p. 739.
8. Striskower, B., Gofman, J. W., Galioni, E. F., Almada, A. A., Simon, A. *Metabolism*, 1954, **3**, 218.
9. Striskower, B., Gofman, J. W., Galioni, E. F., Rubinger, J. H., O'Brien, G. W. *J. clin. Endocrin.* 1955, **15**, 73.

have a relatively greater effect in depressing blood-cholesterol than in raising B.M.R. Thus, Dr. GOOLDEN has shown that a dose of tetrac no greater than is required for the replacement therapy of myxœdema was capable of causing a sizeable drop in the blood-cholesterol of a euthyroid subject. Similarly Dr. TROTTER has shown that triac was able to lower the blood-cholesterol of 3 euthyroid subjects, without a significant increase in B.M.R. He is hesitant, however, about ascribing these effects to the acetic-acid side-chain, because falls in blood-cholesterol of similar magnitude were produced with triiodothyronine. Whatever the significant feature of the molecular structure may be, the fact remains that the new compounds show some promise of being able to lower blood-cholesterol without causing unwanted side-effects. If further work confirms these observations, it might be possible to contemplate a large trial designed to test the proposition that lowering the blood-cholesterol will reduce the incidence of coronary-artery disease.

## Medicine in the Caribbean

SINCE the recommendations [1] of the Asquith Commission on Higher Education in the Colonies, and of its West Indies committee under Sir JAMES IRVINE, were published in 1945, a University College of the West Indies has been established in Jamaica with faculties of arts, science, and medicine. A modern teaching hospital of over 300 beds has been built and staffed from this college, and its clinical instruction was recognised by the University of London as being of sufficiently high standard for the London M.B. (which was passed by 13 out of the first 15 of the college's students who sat the examination). Moreover, wide research has been put in hand and has already produced notable results, as a recent conference (briefly reported on p. 909) reflects. But this conference did more than demonstrate these achievements of the University College of the West Indies: excellent contributions also came from members of the medical services of the different territories of the British West Indies—contributions which bring credit to the local government medical services and to those who have supported the work from this country and the United States.

If the full significance of this medical conference is to be appreciated, it must be viewed against the geographical and social background of the Caribbean. Many of us in Britain are apt to forget the enormous sea distances between the countries and islands which make up the British West Indies. They form a vast semicircle, which covers over 2000 miles, starting on the central American mainland in British Honduras, and passing through the Cayman Isles, Jamaica, the many Leeward and Windward Isles, Barbados, and Trinidad, to end at British Guiana on the northern coast of South America. We forget that the journey from Jamaica to Trinidad is roughly the same distance as that from London to Moscow or Istanbul. Yet these scattered lands are closely linked racially; less than 5% of their peoples are of unmixed European descent, and the majority are African Negroes, with a small proportion of East Indians and Chinese. They are also linked economically through their agriculture; all of them primarily grow sugar or bananas, with smaller quantities of citrus fruits (Trinidad stands alone in having a rich supply of oil and asphalt). A tropical climate modified by the closeness of the sea is common to them all; and they share too the same historical development. It is hardly surprising, therefore, that they have the same medical problems.

Anyone from Britain visiting a general hospital in the West Indies would be struck by the amount and variety of the diseases that can be studied there; but nearly always there are the dreadful complications of poverty and malnutrition to modify the clinical picture and hamper treatment. Yet, superficially, the similarities to British medicine are perhaps more striking than the differences. Typhoid fever, malaria, sickle-cell anæmia, lymphogranuloma venereum, and some specific effects of malnutrition (especially in children) would be the only unfamiliar diseases that the British doctor would commonly see in the general hospital. And he would note with interest the extreme scarcity of emphysema, mitral heart-disease, and neurological conditions such as disseminated sclerosis, subacute combined degeneration, and tabes (despite the prevalence of syphilis). On the other hand, acute lobar pneumonia, paraplegia (often due to cervical spondylosis), acute rheumatic fever (in contrast to the rarity of mitral stenosis), hypertension and its complications, and (possibly linked with hypertension) eclampsia are common.

The challenge has been ably taken up. Malaria has been almost completely eradicated from British Guiana; and at the conference Dr. GIGLIOLI described the long work that has led to this great success, to which he has notably contributed. Again, the nature of Jamaican "vomiting sickness" has been largely elucidated [2]; a new form of liver disease, called venous-occlusive disease, has been described and investigated; research in virus disease in Trinidad and in yaws in Jamaica has been extended; a start has been made at sorting out the neurological syndromes peculiar to the area; and further advances have been made in recognising the all-too-frequent effects of protein malnutrition. It seems likely that medical research in the Caribbean may pay big and rapid dividends in the future. Apart from the study of specific local diseases, there is a great opportunity for the epidemiological and community-survey approach. What precisely is the peculiar distribution of steatorrhœa, and is it related to diet? Is the prevalence of hypertension really as great as it seems? How does the prevalence of hypertension or diabetes compare with racially corresponding groups in Africa? What is the prevalence, class, and locality distribution of the paraplegic syndrome which figures so largely in the neurology of the Caribbean? And there are many other absorbing questions. Help in the elucidation of diseases common in Britain may well come from a study of the differences they show in areas like the Caribbean.

The rapid fall in death-rate caused by the elimination or reduction of the killing diseases by chemotherapy has increased population pressure in nearly every West Indian island and aggravated the problems of

1. Commission on Higher Education in the Colonies. H.M. Stationery Office, 1945. See also West Indies Committee of the Commission on Higher Education in the Colonies. H.M. Stationery Office, 1944.

2. See *Lancet*, April 14, 1956, p. 429.

undernutrition and unemployment. For example, Barbados, which has fully developed its agricultural resources and can hardly increase its income or food-supply any further, had a 1953 population of 221,000 in its 166 square miles. Since 1921, there has been negligible change in its birth-rate but the annual death-rate has fallen from 33 per 1000 population to 14 per 1000 in 1953, resulting in an annual rate of population increase which rose from 0·2% to 1·9% over those years and which is still rising proportionately.[3] And things are much the same in most of the other West Indian islands. If medicine upsets so rudely a stable natural balance, it must join in the efforts to restore a new balance, and the doctor must share the social responsibility in this change with pioneers in other fields. What is now needed is a corresponding success in the bigger and more difficult task of combating the disabling diseases, where malnutrition and psychiatric ills, both intricately linked with social problems, play a very important part.

3. World Population and Resources: a P.E.P. report. London, 1955; p. 112.

The Caribbean is sparsely doctored. In Jamaica, for example, there is only 1 qualified doctor to every 4000 people.[4] The University College of the West Indies can remedy this in the course of time, but only if local schools provide an adequate input of capable students. It is right that when there are suitably qualified West Indians available they should run the medical services, teaching and research; but it is equally wrong to court a danger of parochialism. A free exchange of medical men and women between this country and the West Indies is to be encouraged by every means. In research, the Medical Research Council and the Colonial Office are already following the admirable policy they started in Africa, whereby activities and funds are to be coördinated through a local medical research committee. Above all else, there is need for continued unity of purpose in these widely separated but closely linked lands; if the recent conference heralds this for medicine, it may well have been an historic occasion.[4]

4. The Economic Development of Jamaica. Report by a Mission of the International Bank for Reconstruction and Development. Baltimore, 1952; p. 121.

# Annotations

## DEADLY SWEETS

A RECENT inquest[1] on a child who died of ferrous-sulphate poisoning is another reminder of the disturbing number of accidental deaths caused by drugs. Iron, barbiturates, and anti-histamines, three of the most dangerous groups of drugs,[2] are among those which appear as attractively coloured sugar-coated tablets. Elliot[3] has lately discussed this sinister modern tendency to make drugs look like sweets. When the drugs are intended primarily for adults, such methods of presentation are indefensible.

In recent years a wide range of drugs has been introduced solely for children; and sedatives, analgesics, sulphonamides, and antibiotics are among those now appearing as attractively coloured and flavoured suspensions or tablets designed to appeal to the childish palate. If these preparations enable children to be effectively treated at home rather than in hospital, or eliminate the psychological trauma of repeated injections, they are welcome. But their potential danger must be thoroughly appreciated.

The problem of accidental poisoning will not be solved by reproaching the manufacturer. Indeed, Fraser[4] has suggested that the attractive appearance of drugs may not in fact be as decisive as is generally supposed; and this view is supported by the interesting work of Craig[5] on the type of child who swallows poisons. He points out that those children who are very keen on putting things in their mouth are likely to poison themselves indiscriminately, although an attractive tablet or medicine is an added temptation. Some infants will eat the most unpleasant things, and often do so whenever they are allowed access to them. The insecurely guarded family medicine-chest with its assortment of harmless placebos and potent drugs—legacies of long forgotten ills—is a menace. The garden shed and the cleaning-drawer contain dangerous chemicals, and in a doctor's household there is the collection of unopened samples. Secure screw-topped bottles, locked cupboards, and the disposal of unused drugs provide some safeguard; but the final remedy must lie in wider education of both parents and doctors. Parents must be repeatedly reminded that the exploring toddler is at great risk and that it is not only drugs labelled "Poison" that are dangerous.

Reports of success with heroic measures in the treatment of poisoning by ferrous sulphate[6] and barbiturate,[7] among others, suggest that lives might be saved if action was swifter and surer. In some cities in the United States, "poison centres" have been set up where immediate information can be had about the toxic ingredients of drugs and household preparations and the best treatment. These centres can collect valuable statistics, and could be a source of authoritative propaganda to doctors, clinics, and the press.

But such measures will not immediately improve a situation for which the inaction of doctors is at least partly to blame. The replacement of all attractively coloured and flavoured drugs of potential danger by something less deceptively decorated is long overdue, and is the most effective single step we can take towards preventing these tragedies.

1. *Manchester Guardian*, May 29, 1956.
2. Swinscow, D. *Arch. Dis. Childh.* 1953, **28**, 26.
3. Elliot, J. R. *Brit. Overseas Pharm.* 1956, **109**, 83.
4. Fraser, M. S. *Practitioner*, 1954, **172**, 649.
5. Craig, J. O. *Arch. Dis. Childh.* 1955, **30**, 419.
6. Birk, R. E., Stallard, S. K. *J. Pediat.* 1954, **45**, 164.
7. Hurdle, A. D. H., Lane, B. K. *Lancet*, June 2, 1956, p. 836.

## THIOPENTONE IN OBSTETRIC ANÆSTHESIA

FOR many years most obstetricians and anæsthetists have accepted the view that drugs given to the mother take several minutes to achieve an equal concentration in the fœtus. Thus, the use of intravenous thiopentone for operative obstetrics has usually been an indication for a speedy delivery to avoid the risk of the drug's depressant action affecting the child. Indeed, much of this opinion has been based on theory rather than proven fact, though there is some evidence in its favour.[8] Most experienced anæsthetists and obstetricians would probably agree, however, that a small dose of thiopentone, used only for the induction of anæsthesia, does little to a healthy child, no matter how long after the injection the baby is delivered.

Crawford[9] has lately recorded the results of an investigation of maternal and fœtal serum-thiopentone levels in 41 cases during delivery. (Dr. Crawford's contribution to the correspondence on anæsthesia in obstetrics appears on p. 913). He found that the fœtal serum-

8. Hellman, L. M., Shettles, L. B., Manahan, C. P., Eastman, N. J. *Amer. J. Obstet. Gynec.* 1944, **48**, 851.
9. Crawford, J. S. *Brit. J. Anæsth.* 1956, **28**, 146, 201.

thiopentone level was highest in those babies delivered at the earliest moment after maternal injection of the drug, and the level fell exponentially with an increase in the time before delivery. Moreover, the maternal and fœtal serum levels of thiopentone at the time of delivery were approximately equal in every case, whatever the time between injection into the mother and the birth of the child. The placenta apparently offers little or no barrier to the passage of thiopentone, and Crawford believes that the length of delivery after the induction of anæsthesia by a single small dose of thiopentone is of no significance.

## CAUSE OF HYPOGLYCÆMIC SYMPTOMS

SINCE 1924, when Cannon et al.[1] showed that insulin hypoglycæmia caused a release of adrenaline into the blood of animals, it has been generally accepted that adrenaline is largely responsible for hypoglycæmic symptoms in man. The obvious difficulty in accounting for the sweating which is usually a prominent feature of hypoglycæmia, but which does not follow intravenous or intra-arterial injections of adrenaline,[2 3] could be overcome by postulating that adrenaline release was part of a general hyperactivity of the sympathetic nervous system, due to central stimulation by hypoglycæmia. Though it is mediated by the sympathetic system, the innervation of sweat-glands is cholinergic, and the abolition of sweating by atropine [4] and by hexamethonium [5] is compatible with this hypothesis. But other explanations are not ruled out, and observations pointing to another mechanism have been accumulating. Recently Weil-Malherbe,[6] using a chemical method of assay, recorded a drop in plasma-adrenaline after insulin. His measurements of the normal adrenaline level are at variance with the figures reached by biological assay, and although differences in technique partly reconcile the results of the two methods, the difference of opinion on the effect of hypoglycæmia [7] remains unresolved.

von Euler and Luft [8] demonstrated in man that urinary adrenaline excretion is much increased after insulin. French and Kilpatrick [4] have confirmed this, and they have recently tried to elucidate the part played by adrenaline in causing the symptoms of hypoglycæmia. They found that although sympathectomy prevents adrenaline release, as measured by urinary excretion, it does not significantly alter the hypoglycæmic symptoms. It is hard to estimate the significance of their finding that sweating was invariable in their sympathectomised subjects, without knowing more about the methods used to assess it; for, especially as far as sweating is concerned, sympathectomy is seldom complete because there are ganglia in those rami which escape removal.[9] Since peripheral nerve block, atropine, and hexamethonium stop hypoglycæmic sweating, it is hard to believe that it is not mediated by the sympathetic nervous system and that failure to abolish it is not due to the incompleteness of the sympathectomy.

Chalmers and Keele,[2] having demonstrated that local injections of adrenaline cause sweating, saw no reason to challenge the concept of a solely cholinergic nerve-supply to sweat-glands. It is of interest that in two clinical conditions in which adrenaline release occurs—hypoglycæmia and phæochromocytoma—sweating is a prominent symptom. "Too much significance," Chalmers and Keele remark, "should not be attributed to the failure of intravenous and intra-arterial adrenaline to elicit sweating: our experience has been that acetylcholine and mecholyl (methacholine) may also produce little or no sweat response when given systemically. The possibility that under certain conditions sweating might be caused by circulating adrenaline has not been excluded."

After the administration of insulin, there is a considerable increase in hand blood-flow in normal persons,[4] and a decrease in those with a sympathectomised upper limb whose vessels, as a result of denervation, are sensitised to adrenaline.[10] This suggests that, although adrenaline is released, there are nervous influences which more than counteract its effects in normal persons. Evidence for a decrease in the activity of adrenergic nerves has been produced by von Euler and Luft,[8] who found a reduction in the amount of noradrenaline in the urine in hypoglycæmia. They say that the chief source of urinary noradrenaline is adrenergic nerve-endings. There is also the well-known vagus-mediated increase of gastric secretion in insulin hypoglycæmia to support the conclusion of French and Kilpatrick that "there is much evidence for a general activation of the cholinergic nerves" in this condition. But every nerve arising in the central nervous system and ending outside it is cholinergic, whether it passes to the neuromuscular junction, to an autonomic ganglion, or to the suprarenal gland; so this conclusion serves to underline the fact that a great deal still remains to be discovered and that it will probably have to be sought in the central nervous system itself—no easy task. What does seem to be clear, however, is that "adrenaline is not the main agent in determining the clinical features of hypoglycæmia in man."

## LEUCOTOMY AND THE FAMILY

FRONTAL leucotomy produces changes in those important but ill-defined aspects of behaviour which are termed "personality." The changes may be considerable and are not always desirable.[11] They were first clearly demonstrated by workers such as Rylander, who sought their evidence in the home, from friends and relatives. Here the effects of leucotomy were found to be greater and more complex than was at first suggested by observation of patients in hospital. It follows that the home, to which it may be hoped patients will return, and particularly the personalities of friends and near relatives—above all, wives and children—with whom they will have to live, are of the greatest importance in measuring the success or failure of the operation. Nevertheless, this information is often very cursorily gathered. A brief and sometimes stereotyped report from a psychiatric social worker, or an interview with the one relative thought to be mainly concerned, may be taken as sufficient; and the complex psychodynamics of the family is neglected. When the patient returns home, usually largely relieved of his more prominent symptoms, the effect on the family may sometimes be disastrous.

A recent detailed study [12] of 19 women who returned to family life after operation is illuminating. The hazards are potentially greatest when the patient is a mother of small children, though the determination to keep a home together may be a stabilising influence. Even with single women living with relatives, however, the previous social unit may break down completely. Lane's inquiries [12] emphasise the overwhelming importance of the personalities of those who have to live intimately with the patient after operation. Detailed information on this score must be regarded as essential before deciding on operation, and more particularly in planning postoperative care. The information will also be valuable in determining what kind of preparation to give relatives before they meet the changed personality, and how much and for how long they will need help in dealing with their new situation. This is one aspect of social psychiatry

1. Cannon, W. B., McIver, M. A., Bliss, S. W. *Amer. J. Physiol.* 1924, **69**, 46.
2. Chalmers, T. M., Keele, C. A. *J. Physiol.* 1951, **114**, 510.
3. Barcroft, H., Swan, H. J. C. Sympathetic Control of Human Blood Vessels. London, 1953.
4. French, E. B., Kilpatrick, R. *J. clin. Sci.* 1955, **14**, 640.
5. Laurence, D. R., Stacey, R. S. *Brit. J. Pharmacol.* 1952, **7**, 255.
6. Weil-Malherbe, H. *J. ment. Sci.* 1952, **48**, 565.
7. Holzbauer, M., Vogt, M. *Brit. J. Pharmacol.* 1954, **9**, 249.
8. von Euler, U. S., Luft, R. *Metabolism*, 1952, **1**, 528.
9. Boyd, J. D., Monro, P. A. G. *Lancet*, 1949, **ii**, 892.
10. Freeman, N. E., Smithwick, R. H., White, J. C. *Amer. J. Physiol.* 1934, **107**, 529.
11. See *Lancet*, 1954, **i**, 1223.
12. Lane, M. A. *Brit. J. Psychiat. soc. Work*, 1956, **3**, 18.

which could profitably be expanded, and which could ensure that when the patient benefits from the operation, his relations and friends do so too.

## STREPTOCOCCI AND RHEUMATIC RELAPSES

THE antistreptococcal antibody levels in the blood during the first few weeks of an acute attack of rheumatic fever support the view that group-A streptococcal infections are a cause of this condition. Thus, it is well known that in about 80% of cases the serum antistreptolysin-o titre is raised or rising; and if more than one antistreptococcal antibody is looked for (if, for instance, antistreptokinase and antihyaluronidase levels are also measured), then the antistreptococcal antibody titre is raised in nearly every case of acute rheumatism.[1] In chronic or polycyclic rheumatic fever, the behaviour of the various antistreptococcal antibodies is less well established. The strikingly successful prophylactic use of penicillin or sulphadiazine against rheumatic relapses [2] is strong evidence that streptococcal infection is no less important in reactivating than in initiating the rheumatic process, yet serological proof of this has often been lacking. Some recent studies of Professor Stollerman and his colleagues [3] have related the immune response to streptococcal infection to three clinical manifestations of rheumatic fever—the acute attack, the chronic activity, and the rheumatic relapse.

In acute "monocyclic" cases (in which all clinical and laboratory evidence of rheumatic activity had subsided within six months of onset), Stollerman et al. found, initially, the expected high incidence of raised antistreptococcal antibody titres. In these patients (all of whom were receiving prophylactic antibiotics) they also measured the rate of fall of antibody levels during the twelve months after the acute episode. This rate of fall was determined solely by the absence of new streptococcal infection, and not by the course of the disease. When a comparison was made between these acute cases and those showing chronic activity in which clinical symptoms had persisted for more than six months, the rate of fall of antibody levels was found to be no different. This seems to rule out renewed streptococcal infection as a cause of chronic activity. In the third group—the rheumatic relapses—two types of case were differentiated on clinical grounds and they were also distinguishable by antibody tests. The first type included the ones which relapsed after withdrawal of aspirin or cortisone therapy. All relapsed within two months and 95% within one month of stopping treatment, and none showed increased antibody levels. The second type relapsed more than two months after previous activity had subsided; they had all had no prophylaxis, and the antistreptococcal antibody titres were newly raised. It is clear that it is only in this type of case that reinfection with group-A hæmolytic streptococci is primarily responsible for renewal of the disease.

Taranta and Stollerman [4] have investigated cases of Sydenham's chorea along the same lines. It is known that when chorea is associated with other rheumatic manifestations it usually follows them after a variable period of weeks or months. Taranta and Stollerman found, however, the same lag period even when the rate of fall of antibody levels and continuous antibiotic prophylaxis could be said to rule out the possibility of intercurrent reinfection with streptococci. In patients in whom the only clinical manifestation was chorea ("pure" chorea), the incidence of raised streptococcal antibody titres was 73% in those studied within one month of onset, and 45% in those studied later (one to five months after onset). While these figures would be low for rheumatic fever at similar intervals after onset, they may, Stollerman suggests, reflect the existence of a long latent period between streptococcal infection and the onset of chorea—a period measurable perhaps in months. In America, he points out, the peak incidence of chorea in fact follows the peak incidence of rheumatic fever at an interval of one to three months.[5]

Although it is hard to determine the precise time of onset of chorea, and to dissociate pure chorea from rheumatic fever with certainty, the evidence suggests that the relation of streptococcal infections to rheumatic fever is close throughout the natural history of the disease. Stollerman's work emphasises once more the importance of defence against streptococci at all stages of rheumatic fever.

## BIRTHDAY HONOURS

THE peerage conferred on Sir Henry Cohen is decorative but also functional. Reformed or not, the House of Lords will remain a useful place for explanation and discussion by the expert, and its new member can speak to it with authority on a remarkably large number of medical issues. His knowledge of the National Health Service has been gained diversely as physician, professor of medicine at Liverpool, member of the General Medical Council, president of the British Medical Association, vice-chairman of the Central Health Services Council, and adviser to all the Ministers of Health since the service started. So great have been the demands made upon him that nowadays no explorer of this part of medicine can go far without finding the tracks of some pioneer Cohen committee in the sand. With Sir Henry's immense capability go other qualities that make his friends glad that this new honour should be paid him. In his union of quietness with brilliance, of delicacy with endurance, he resembles intellectually the good silver from which, with other kinds of art, he gets so much enjoyment.

A second former president of the B.M.A. appearing in the list is Mr. Tudor Thomas, whose tour of the association's branches in the Middle and Far East was a notable contribution to its work. But it is for his large part in making corneal grafting into a practicable operation that the name of Tudor Thomas is most widely known, and many have reason to be grateful for the surgical research he has pursued so skilfully since the 1920s. Another of the new knights, Professor Bedson, has had an even longer career of fruitful investigation, happily continuing since his academic retirement. But whereas his virus studies, particularly of psittacosis, earned him the fellowship of the Royal Society, his new distinction chiefly recognises what he has done so wisely for the organisation of pathology in this country—during the war as a sector pathologist, and since 1949, in succession to the late Sir Philip Panton, as chairman of the Central Committee of Pathology at the Ministry of Health. Dr. Arthur Massey, chief medical officer of the Ministry of Pensions and National Insurance, was, like Dr. Bedson, a combatant officer in the first world war, and he first gained a national reputation by his outstanding work for Coventry, where he was M.O.H. for sixteen years including the time of the bomb damage. Formerly chairman of the Central Council for Health Education, he is himself a writer and lecturer, and is welcomed as a friend even when he comes as an examiner. The last of the four knights, Dr. Harkness, is less generally known in this country, for he reached his present post in the West Indies through appointments in Palestine and in Africa, including the directorship of medical services of the Gold Coast and Nigeria. With many other colleagues abroad, as well as at home, whose names appear on p. 907, he has our congratulations.

1. McCarty, M. *In* Rheumatic Fever. Edited by L. Thomas. Minneapolis, 1952; p. 146.
2. Stollerman, G. H. *Amer. J. Med.* 1954, **17**, 757. Perry, C. B., Gillespie, W. A. *Brit. med. J.* 1954, ii, 729; see also *Lancet*, 1955, i, 553.
3. Stollerman, G. H., Lewis, A. J., Schultz, I., Taranta, A. *Amer. J. Med.* 1956, **20**, 163.
4. Taranta, A., Stollerman, G. H. *Ibid*, p. 170.
5. Hedley, O. F. *Publ. Hlth Rep., Wash.* 1940, **55**, 1809.

# Special Articles

## FLOUR

MEMORANDUM OF A CONFERENCE * APPOINTED BY THE MEDICAL RESEARCH COUNCIL TO PREPARE EVIDENCE FOR SUBMISSION TO THE GOVERNMENT PANEL ON COMPOSITION AND NUTRITIVE VALUE OF FLOUR

*Nutritional Requirements*

The most recent authoritative assessment of nutritional requirements in this country is contained in the report of the Committee on Nutrition of the British Medical Association published in 1950.[1] The nutritional levels recommended in the report were formulated not only on the results of research but also on the general basis that a high standard of health had been maintained on the diet prevailing in Great Britain during the war, and that the nutrient content provided by that diet might reasonably be accepted as a satisfactory standard for the population as a whole. The B.M.A. recommendations take account, within broad limits, of differences of age, sex, and physical activity, and allow a margin for individual variation. With the reservation that the number of people in the community whose requirements may be significantly different is unknown, the council's conference are agreed that the B.M.A. recommendations are a fair assessment of average requirements with a reasonable, and not excessive, margin of safety; that, in the absence of other evidence, they represent a level to which it is reasonable to expect the diets of all to attain; and that they should be used as the standard in considering the effects of any changes in the national diet.

*Food Consumption in Relation to Nutritional Requirements*

The National Food Survey Committee of the Ministry of Agriculture, Fisheries, and Food conducts an annual survey of the domestic food consumption and expenditure (allowance being made for meals eaten outside the home) of a randomly selected sample of households (over 11,000 in 1954) in some sixty parliamentary constituencies throughout Great Britain. In addition to the figures for 1952, which have been published,[2] those for 1953[3] and 1954 have been made available by the Ministry to the council's conference. Table I is taken from the findings of the survey and shows, for certain selected nutrients, the extent to which the B.M.A. requirements were met in these years. During this period, average expenditure on food was rising, and, with the gradual end of rationing, a wider variety of foods was becoming available, while, even after the decontrol of flour in August, 1953, the bread consumed continued to be made almost entirely from National flour which was required under the Flour Order 1953 to be of 80% extraction or its equivalent. Table I shows that the B.M.A. standards were in general being met, but the figures also suggest that, on the average, large families, and particularly those with adolescents as well as children, were in some respects barely meeting them, although they were not falling short to any substantial degree. The classification of households given in table I does not, however, distinguish between different income groups and may therefore to some extent obscure conditions in the families in the lowest income group. Reliable information on these, the least favoured, families cannot be obtained from the survey because the sample is too small, but the Ministry has been asked to prepare figures for food consumption in families with four or more children in the two lowest income groups, which taken together represent about 50% of the total number of such households and will provide a sample large enough to give valid results. The analysis when completed will be considered by the conference and forwarded to the Panel.†

*Contribution of Bread and Flour to Nutritional Requirements*

In this country bread is the largest and most important single item of the diet, providing between one-fifth and one-third of the calories and protein and a high proportion of other essential nutrients (table II). It can therefore be expected that a reduction in the extraction-rate of flour will affect the intake of nutrients, and particularly so in the largest families which are most dependent on bread. Table III shows the concentrations at different extraction-rates of some of the nutrients present in flour, and it will be seen that there are some significant differences between 80% and 70% extraction flours. From the figures in table I it is evident that a change in extraction-rate from 80% to 70% would entail a less favourable nutritional standard, particularly for the most vulnerable groups.

*Nutrient Content of Flour and Fortification*

A reduction in the extraction-rate of flour affects the levels not only of vitamin $B_1$, riboflavine, nicotinic acid,

† These figures were subsequently considered by the conference and were found to accord with the conclusions in this paragraph.

TABLE I*—THE EXTENT TO WHICH CERTAIN NUTRITIONAL REQUIREMENTS WERE MET IN HOUSEHOLDS IN 1952, 1953, AND 1954, EXPRESSED AS A PERCENTAGE OF THE B.M.A. RECOMMENDATIONS

| Element | Year | Extraction-rate of flour (%) | Households with 1 male and 1 female and: | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Children only | | | | Adolescents only | Children and adolescents |
| | | | 1 | 2 | 3 | 4 or more | | |
| Calories .. | 1952 | 80 | 105 | 101 | 99 | 101 | 96 | 93 |
| | 1953 | 80 | 107 | 102 | 99 | 100 | 99 | 95 |
| | †1954 | 80 | 109 | 105 | 100 | 99 | 102 | 97 |
| Total protein | 1952 | 80 | 112 | 102 | 96 | 95 | 100 | 90 |
| | 1953 | 80 | 112 | 102 | 95 | 93 | 101 | 89 |
| | †1954 | 80 | 112 | 102 | 95 | 90 | 100 | 89 |
| Iron .. .. | 1952 | 80 | 115 | 106 | 102 | 101 | 108 | 99 |
| | | 70 | 107 | 100 | 95 | 94 | 92 | 92 |
| | 1953 | 80 | 116 | 106 | 103 | 100 | 110 | 100 |
| | | 70 | 110 | 101 | 96 | 94 | 104 | 95 |
| | †1954 | 80 | 118 | 111 | 103 | 100 | 112 | 102 |
| | | 70 | 112 | 105 | 97 | 93 | 105 | 96 |
| Vitamin $B_1$.. | 1952 | 80 | 140 | 130 | 129 | 131 | 127 | 121 |
| | | 70 | 110 | 102 | 100 | 103 | 97 | 90 |
| | 1953 | 80 | 139 | 131 | 127 | 128 | 130 | 121 |
| | | 70 | 111 | 106 | 100 | 99 | 102 | 96 |
| | †1954 | 80 | 139 | 131 | 126 | 124 | 128 | 120 |
| | | 70 | 113 | 113 | 100 | 96 | 102 | 91 |
| Riboflavine .. | 1952 | 80 | 121 | 113 | 109 | 104 | 104 | 96 |
| | 1953 | 80 | 120 | 113 | 107 | 101 | 104 | 95 |
| | †1954 | 80 | 120 | 114 | 108 | 101 | 105 | 95 |
| Nicotinic acid | 1952 | 80 | 139 | 129 | 123 | 121 | 131 | 119 |
| | | 70 | 115 | 107 | 104 | 101 | 111 | 99 |
| | 1953 | 80 | 142 | 130 | 124 | 122 | 134 | 121 |
| | | 70 | 127 | 116 | 108 | 106 | 118 | 105 |
| | †1954 | 80 | 140 | 130 | 121 | 116 | 136 | 119 |
| | | 70 | 124 | 116 | 106 | 100 | 119 | 103 |

* The figures in this table are derived from the findings of the National Food Survey. The contribution of bread and flour to the diets in these households is calculated on the basis of the mean figures for the composition of flour at different extraction-rates which were obtained from the Ministry of Agriculture, Fisheries, and Food and which are given in table III. The flour normally used during these years was National flour which was required under the Flour Order, 1953, to be of 80% extraction or its equivalent. The figures for 70% extraction have been included for comparison.
† Provisional figures only.

* The members of the conference were: Sir ALAN DRURY, F.R.C.P., F.R.S. (chairman), Prof. S. J. COWELL, F.R.C.P., Dr. D. P. CUTHBERTSON, Prof. R. A. MCCANCE, F.R.C.P., F.R.S., Sir RUDOLPH PETERS, F.R.C.P., F.R.S., Prof. B. S. PLATT, M.B., Dr. W. P. H. SHELDON, Dr. H. M. SINCLAIR, Prof. A. W. WOODRUFF, F.R.C.P., Prof. F. G. YOUNG, D.SC., F.R.S., and Dr. R. H. L. COHEN (secretary).

1. British Medical Association, Report of Committee on Nutrition, 1950.
2. Domestic Food Consumption and Expenditure, 1952: Annual Report of the National Food Survey Committee. H.M. Stationery Office, 1954.
3. Domestic Food Consumption and Expenditure, 1953: Annual Report of the National Food Survey Committee. H.M. Stationery Office, 1955.

TABLE II*—PERCENTAGE CONTRIBUTION OF BREAD AND FLOUR TO SOME ELEMENTS OF THE DIETS OF HOUSEHOLDS IN 1954

| Element | Households with 1 male and 1 female and : | | | | | |
|---|---|---|---|---|---|---|
| | Children only | | | | Adolescents only | Children and adolescents |
| | 1 | 2 | 3 | 4 or more | | |
| Calories | 25 | 25 | 27 | 29 | 27 | 30 |
| Total protein | 29 | 29 | 31 | 34 | 31 | 35 |
| Iron | 25 | 25 | 26 | 29 | 26 | 29 |
| Vitamin $B_1$ | 31 | 31 | 33 | 35 | 33 | 36 |
| Riboflavine | 7 | 7 | 8 | 8 | 8 | 9 |
| Nicotinic acid | 26 | 26 | 28 | 30 | 26 | 30 |

* The figures in this table are derived from the National Food Survey and are provisional only. During 1954 bread made from flour of 70–72% extraction was available in addition to bread made from flour of 80% or higher extraction. Almost all the bread consumed, however, was made from National flour which was required under the Flour Order, 1953, to be of 80% extraction or its equivalent.

and iron (table III), but also of a number of other nutrients which are present in wheat but about which less is known. No figures are available to show the extent of the fall of these less well-known nutrients between 80% and 70% extraction flours, but table IV, which gives the levels for white "top patent" flours, indicates that there might be a considerable fall. Those who advocate a policy of fortification in this country do not propose to restore to bread all the nutrients that have been lost by milling to a low rate of extraction. The proposal is to add only iron, vitamin $B_1$, and nicotinic acid, the implication being that the restoration to flour of other substances is not necessary, under present conditions in this country, even though some of these substances are known to be essential for animal nutrition in planned laboratory experiments. In the opinion of the conference, present knowledge provides no basis for an assumption such as this, and past experience should make one cautious of accepting it.

In 1936, when the suggestion was first made that bread in this country should be fortified, the only constituent which it was proposed to restore was vitamin $B_1$. Ten years later the Conference on the Post-War Loaf [4] recommended minimum values not only for vitamin $B_1$ but also for iron and nicotinic acid, and the official medical and scientific members held that these values should be attained not by restoration but by retaining the substances during the milling process, so as to include along with them, as far as possible, all the other nutritional factors which might be present in the original wheat. Recent experience with pyridoxine has shown that it would be unwise to neglect the possible nutritional importance of lesser-known or unknown nutrients: when the Conference on the Post-War Loaf met, the nutritional importance of pyridoxine was known only from animal experiments; it has now been shown to be essential to human nutrition, for pyridoxine deficiency has been found to give rise, under special conditions, to recognisable disease in man. In the opinion of the conference it cannot be assumed that this process of discovery is at an end.

4. Ministry of Food: Report of the Conference on the Post-War Loaf. Cmd. 6701. H.M. Stationery Office, 1945.

*The Widdowson/McCance Studies of the Effect of Variations on the Extraction-rate*

The most recent investigations of the effects of variations in the extraction-rate of flour are those of Dr. E. M. Widdowson and Prof. R. A. McCance.[5]

Their investigations were carried out after the war on children in two German orphanages. For the purposes of the trial, each child continued to receive his full German rations with the exception of the German bread, which was replaced by unlimited amounts of bread made from one of five types of flour specially milled in England: (1) 100% extraction; (2) 85%; (3) 70%; (4) 70% with iron, vitamin $B_1$, nicotinic acid, and riboflavine restored to the 85% level; and (5) 70% with iron, vitamin $B_1$, nicotinic acid, and riboflavine restored to the 100% level. All contained added calcium. The children obtained up to three-quarters of their calories in the form of flour products; the rest of their food consisted chiefly of vegetables and contained very little milk or other animal protein.

TABLE IV*—MEAN CONTENTS OF CERTAIN NUTRIENTS IN FLOUR OF 80% EXTRACTION AND "TOP PATENT" FLOURS

| | Mean content (mg. per 100 g.) | |
|---|---|---|
| | 80%-extraction flour (straight-run) | Whiter† ("top patent" mill streams) |
| Iron | 1·7 | 0·9 |
| Vitamin $B_1$ | 0·21 | 0·04 |
| Riboflavine | 0·062 | 0·04 |
| Nicotinic acid | 1·7 | 0·9 |
| Biotin ($\times 10^{-4}$) | 23 | 5 |
| Pyridoxine | 0·29 | 0·11 |
| Folic acid | 0·026 | 0·012 |
| Pantothenic acid | 0·37 | 0·33 |

* Figures supplied by the Ministry of Agriculture, Fisheries, and Food.

† No figures are available for flour of 70–72% extraction. The flours in the "top patent" mill streams varied from 30% to 60% extraction.

Before the investigation began the children had been receiving an inadequate diet and they were in consequence of less than normal height and weight. During the year for which the trial continued, their health improved and their gains in height and weight considerably exceeded those accepted as normal for American children of the same age and sex. This was equally true whichever bread was included in their diets.

In interpreting these results it is important to recognise that nutrients were provided at levels comparable with those of the B.M.A. recommendations ‡ by all the diets, irrespective of the type of flour used. It is therefore understandable, although surprising at the time in view of what was thought about the importance of animal

5. Widdowson, E. M., McCance, R. A. Studies on the Nutritive Value of Bread and on the Effect of Variations in the Extraction Rate of Flour on the Growth of Undernourished Children. *Spec. Rep. Ser. med. Res. Coun., Lond.* 1954, no. 287.

‡ Riboflavine was an exception.

TABLE III—COMPOSITION OF FLOURS NORMALLY USED IN THE U.K. COMPARED WITH THAT OF FLOURS USED IN THE FEEDING TRIALS IN GERMANY

| Element | U.K. flours * (mg. per 100 g.) | | | | | | | | Flours used † in investigation in Germany (mg. per 100 g.) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100% extraction | | 85% extraction | | 80% extraction | | 70–72% extraction* | | 85% extraction | 70% extraction (unfortified) |
| | Mean | Range | Mean | Range | Mean | Range | Mean | Range | | |
| Vitamin $B_1$ | 0·37 | 0·28–0·46 | 0·29 | 0·22–0·36 | 0·24 | 0·18–0·39 | 0·08 | 0·06–0·10 | 0·34 | 0·15 |
| Riboflavine | 0·12 | 0·09–0·15 | 0·07 | 0·05–0·09 | 0·06 | 0·045–0·075 | 0·05 | 0·04–0·06 | 0·08 | 0·05 |
| Nicotinic acid | 5·70 | 4·2–7·2 | 2·00 | 1·5–2·5 | 1·60 | 1·2–2·0 | 0·80 | 0·60–1·0 | 2·90 | 1·90 |
| Iron | 3·5 | .. | 2·1 | .. | 1·65 | .. | 1·25 | .. | 2·84 | 1·70 |

* Figures supplied by the Ministry of Agriculture, Fisheries, and Food. The figures for flours of 70–72% extraction are from analyses made before the war.

† Figures derived from the report on the feeding trials in Germany (*Spec. Rep. Ser. med. Res. Coun., Lond.* 1954, no. 287).

protein, that these undernourished children should have shown a greatly increased growth-rate that was not dependent on the rate of extraction of the flour. It is also to be noted (see table III) that the 70%-extraction flour used in the feeding trial in Germany was rich in some nutrients and indeed, on the analyses available, in some respects more nearly resembled the 80% than the 70% flour used for breadmaking in this country.

These considerations are of importance in assessing the relevance of the results of the trial to conditions likely to obtain in this country. The conference agree with the first conclusion drawn by Dr. Widdowson and Professor McCance on p. 68 of their report, which emphasises that caution should be exercised in generalising from results obtained in one experimental setting.

*The Effects on Health*

The conference do not suggest that a reduction of the extraction-rate of flour from 80% to 70% would in itself be likely to give rise to widespread illness in the present favourable circumstances in this country. If, however, for any reason the population had to rely on bread for a greater proportion of their nutritional requirements than they do today, the different nutrient content of breads made from flours of different extraction-rates might become important, particularly in the more vulnerable groups. Moreover, the absence of recognisable illness in an individual is not a sufficient criterion that his diet is nutritionally sound. An iron deficiency, for example, invariably affects efficiency; yet the resulting anæmias may vary in intensity from those detectable only by laboratory tests to others which are completely incapacitating. Again, a person may live for long periods on a diet supplying marginal amounts of vitamin $B_1$ without suffering from beriberi, and then under some additional stress collapse with fulminating beriberi. Great caution is therefore needed before making changes which may lower the nutritional value of a nation's staple food.

*Conclusions*

The conference therefore conclude that in the light of present scientific and medical evidence:

1. Flour of 80% extraction is a more complete source of nutrients than unfortified or partially fortified flours of lower extraction-rates.

2. On the evidence available at present, there are families which, with bread made from unfortified 70%-extraction flour, would not be obtaining all their nutritional requirements in full, as recommended by the British Medical Association Committee on Nutrition in 1950.

3. The consumption of a 70%-extraction flour, even if this is partially fortified, would lead to a reduced intake of some nutrients. Although such a reduction would not necessarily lead to an increase in recognisable illness, it would, in the present state of knowledge, constitute a risk which can be avoided.

## INVALID HOISTS AND SIMILAR NURSING AIDS

H. R. RISHWORTH
C.B.E., V.D., F.R.C.S., D.P.H.

INCREASING attention is being paid to mechanical aids to lighten the labour of nursing helpless patients. The present shortage of nurses may be a cause but there are other factors at work.

The tendency to manipulate the body as a whole and in one unit in spinal conditions and in affections of the major joints, demands an increase in the effort necessary on the part not only of the nurse but also the patient.

Injuries of the spine now receive care to an extent which nurses probably did not experience before the world wars

Patients with severe paralytic poliomyelitis who in past years might not have survived, can today, after careful nursing and attention to the respiration and skin, attain in the course of a year or two a considerable measure of happiness and comfort if regularly assisted each day from bed to chair, commode, or bath and back to bed—a manœuvre which has aptly been described as "bridging the gap" (Vinden and Bayne 1955).

Fig. 1—'Easicarri' hydraulic hoist: A, hydraulic-lift handle; B, hydraulic release valve; C, wheel for opening and closing base.

Aged patients receive more scrupulous and exacting attention; indeed longer survival into increasing helplessness of many old people is certainly a factor in directing attention to mechanical devices. In many cases, especially in patients above normal weight, efficient movement and turning are almost impossible without some mechanical aid or a great deal of labour on the part of several assistants.

### Some Apparatus in Use

Russell and Schuster (1956) describe several devices developed by them and in use at Headington Hill Hall Rehabilitation Centre, Oxford: one is a modification of the mobile 'Sherpa' industrial truck; two others are types of crane fixed either to the wall or to the head of the bed. Two of the three are operated hydraulically and the third by a counterpoise arrangement of weights.

The Huddleston hoist (*Nursing Mirror* 1954), manufactured by John Bell & Croyden, 50, Wigmore Street, London, W.1, is of duralumin and makes it possible for a nurse to deal single-handed with a bedridden patient. The whole apparatus can be transported and assembled at the bedside without special tools.

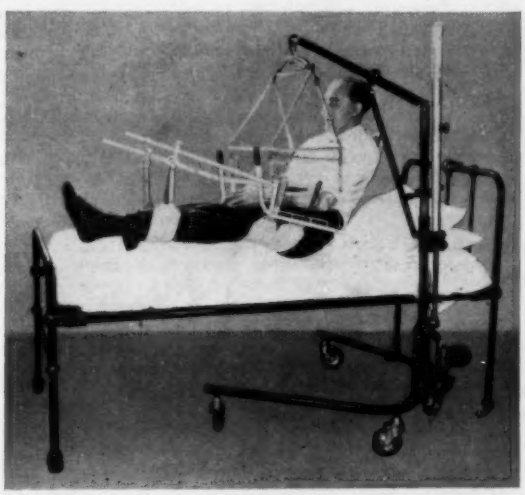

Fig. 2—Chair-type sling, with rests for legs, back, and arms, used with 'Easicarri' hoist.

The 'Beem' bed, designed by an American physician, is a more ambitious and expensive piece of furniture (*Nursing Mirror* 1955). It has appropriately been called the "push-button" bed. Tests made in the U.S.A. suggest that there is a saving of 46% of the nurses' time during a twenty-four-hour spell of its use. It comprises a self-contained stretcher, a flush toilet, two cabinets for linen, and push-button control within reach of the patient's hand.

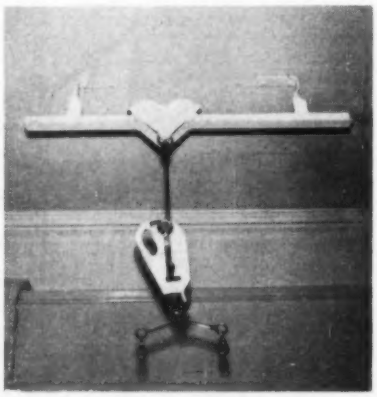

Fig. 3—Traverse beam, geared chain-hoist, and coat-hanger bar.

Allen (1954) has patented for incontinent patients a simpler bed incorporating a movable centrepiece over a compartment containing a bedpan.

Turner (1954) describes a more elaborate suspended plaster-bed frame used at Doncaster Gate Hospital, Rotherham, Yorks. Frames of this type have been specially designed for spinal cases, and the aim has been to make the whole unit mobile and so arranged that the patient can use the various movements at will.

The Standard Sales Co. Ltd., Maidstone Building, 74/76, Borough High Street, London, S.E.1, manufacture an exceptionally light and mobile hoist (fig. 1) operated hydraulically and provided with a safety slow-release valve. The hoisting arm is hinged to the main pillar, and the trolley wheels are mounted on a tubular base whose arms can be closed to a minimum of 26 inches, so that the machine can pass through the doorways of a private house. These tubular arms can be spread apart to admit the widest type of invalid wheel-chair. Various accessories include canvas or nylon slings for use in a bath or with an aperture for toilet purposes, and an elaborate chair with rests for legs, back, and arms (fig. 2). By a simple drill described by the makers a single attendant can prepare a patient, lift him from the bed, and lower him into a chair in not more than 5–7 minutes.

Fig. 4—Adjustment of harness.

Recently Prior (1956) has described a bed crane specially designed by Mr. James Genet, senior orthopædic technician at Wellington Hospital, for a patient who for six years could not lift herself out of bed or on a bedpan without help. The machine incorporates an ordinary motor-car hydraulic jack, and the patient by working the handle can lift herself off the bed or wheel-chair and lower herself as necessary. The cost to make it is about £23. The design is not covered by patents of any kind and is available for any hospital to copy.

### A New Device

We owe these machines to the efforts of those in attendance on the helpless. A recent device, however, is of special interest in that it is the invention of a patient. M. Watson, a victim of severe poliomyelitis causing extensive paralysis of the muscles of the trunk, almost all the muscles of the arms, and all those of the legs, has devised, with the help of a builder, a machine which enables a single attendant to move him with ease and comfort for every general and special purpose connected with nursing and with no more effort than is necessary to wind an easily worked handle.

Fig. 5—Transference from bed to chair.

The webbing harness for attachment to the patient resembles in its general pattern that of most such appliances, but the special features which make it unique in its efficiency and handiness are the use of a traverse beam attached to the ceiling and a geared chain-hoist. The beam allows easy lateral movement not only from bed to chair, commode, or bath and back, but also, when the patient is in a general ward, transport with minimal assistance from one bed to another, limited only by the length of the beam. Indeed, if the beam is extended sufficiently, the hoist could be used for transport along a corridor to a bath without much difficulty. The geared chain-hoist is an adaptation of that used in garages and workshops for raising motor engines.

Fig. 3 shows clearly the simplicity and clean lines of the appliance, unencumbered by vertical uprights or a multiplicity of pulleys and ropes which hinder access to the patient for nursing or feeding. Figs. 4 and 5 show, in two stages, the procedure of "bridging the gap" from bed to chair by a helpless patient with the aid of only one attendant. Many other applications of the apparatus easily suggest themselves, including lifting for attention to the back, use of a bedpan, insertion of an air-pillow, remaking the bed for a helpless

patient, and readjusting the pillows. Transport to the bath is effected with a special canvas sling (fig. 6), and continuous support in a semi-reclining position can also be arranged with a suitable harness. This is in some cases more satisfactory than the usual back-rest with its tendency to allow the patient to slip down the bed.

The geared block (fig. 3) incorporates a clutch which provides for instant release for winding up without any danger of slipping and is light, elegant in appearance, and easily cleaned.

The traverse beam can be attached to the ceiling without much difficulty by a competent builder. The apparatus is made by the Invalid Equipment Company, 22, Ashley Park Road, Walton-on-Thames, Surrey, founded by the patient in spite of his physical handicap.

Fig. 6—Canvas sling for transferring patient to bath.

I am indebted to the *Nursing Mirror* for permission to use drawings (figs. 2 and 3) based on photographs taken by the staff of that journal.

REFERENCES

Allen, W. J. (1954) *Nursing Mirror*, Dec. 17.
*Nursing Mirror* (1954) July 2, vii.
— (1955) Feb. 4.
Prior, I.A.M. (1956) *Lancet*, i, 616.
Russell, W. R., Schuster, E. (1956) *Brit. med. J.* i, 211.
Turner, F. W. (1954) *Nursing Mirror*, Feb. 19, x.
Vinden, K., Bayne, J. R. D. (1955) *Brit. med. J.* ii, 432.

## USE OF HOSPITAL RECORDS IN RESEARCH

AT a meeting of the medical section of the Royal Statistical Society in London on May 29 the use of routine hospital records in research was discussed.

Dr. A. C. DORNHORST dealt with the nature of clinical records. The history was neither a statement of fact nor a record of what the patient said. It was rather an aide-mémoire, a personal document to remind the writer of an interview at which the patient's statements were largely determined by the nature of the questions asked and the manner of their asking. It was the record of a conspiracy between the patient and the doctor and was subject not only to errors of memory and reporting but also to the moods and current ideas of the reporter. The observer error in recording physical signs and radiographic appearances, and the experimental error of laboratory estimations, were becoming increasingly well known. It was an interesting paradox that, despite all these difficulties and inconsistencies, there was in general little difference in the conclusions reached from them. The physician did not, in fact, arrive at his diagnosis by logical inference from what he recorded. Clinical records tended to become shorter as the writer grew older; and with increasing experience fewer words were required to remind him of his attitude of mind at the time the record was made. Research from routine records might be worth while, but it would be interesting to inquire further into what such records really were.

Dr. J. R. BIGNALL said that routine hospital records could give valid answers only if they were asked the right questions. Every question must be put in such a form that it was nowhere assumed that what was recorded in the notes was true. Each part of the question should then be examined to estimate the probability that the recorded statement was a statement of fact. Only by having an intimate knowledge of the special subject of the study was it possible to estimate these degrees of reliability and hence to make valid inferences. Much research from hospital records used comparisons; and in these the effect of inaccurate reports might be cautiously neglected, if it could be reasonably assumed that the reliability of particular statements in the questions asked was not influenced by the nature of the characteristics being compared. Much research from routine records was undoubtedly a waste of time. But properly conducted it could be as logically correct and as useful as research in the laboratory.

Mr. M. P. CURWEN said that research included not only the answering of precisely formulated questions but also the observation and reflection that necessarily preceded the making of such questions. It was for this purpose that routine hospital records were most useful. The precise question might be answerable only by planned prospective surveys; but retrospective study of hospital records, however inaccurate, usually determined what questions were to be asked. There were some statistical difficulties associated with such studies. For instance, in general there was no justification for using tests of significance with the type of material obtained from routine hospital records. This was especially so where arbitrary classifications of symptoms, signs, and pathological reports were being used; for slight changes in the arbitrary groupings might radically affect the interpretation of such tests. The tests were useful as rough guides to the investigator in judging whether the inferences he was drawing were reasonable; but they should not be relied on too much, nor should they usually be published in the final report.

## GENERAL MEDICAL COUNCIL

SESSION MAY 29–JUNE 1

THERE were a number of new faces at the General Medical Council on May 29, for elections and changes in Crown and university appointments have brought about an extensive alteration of composition. The meeting was the last to be attended by dentists representing the Dental Board, which, as Sir DAVID CAMPBELL, the council's president, said in his address (reported last week), is to be replaced by the General Dental Council in July.

The President, in bidding farewell to the dental members, said that they had been colleagues in one of the most difficult tasks which the council had had to perform; for in considering dental disciplinary cases the council was not in a position to hear the evidence but could accept the recommendation of the Dental Board or send the case back.

Sir WILFRID FISH replied that they had always realised the enormous value they had received from the council; he was sure that this had not been appreciated by the public as much as it should have been. The dental profession, he remarked, must have gone through the whole gamut of emotions during the eighty-eight years it had been associated with the General Medical Council. Sir Wilfrid declared that one of the greatest sources of pride to the dental profession was that its tradition was based on that of medicine. Then, as time went on, they had had another emotion—that of frustration—to a certain extent. Now independence rid them of the feeling of inferiority which was inevitable when under the tutelage of some other body.

The council considered in camera the question of the admission to examinations held by licensing bodies of practitioners whose names have been erased from the Medical Register.

On resumption in public, Dr. J. P. HEDLEY, the senior treasurer, presented the report of the finance committee. In 1955 total expenditure was £7948 greater than in the previous year; income exceeded expenditure by £3926. The increased expenditure was almost wholly attributable to a special allocation of £5000 towards the heavy expenditure which was at present being incurred on the visitation and inspection of examinations and the visitation of medical schools, and an increase of about £2745 in fees and allowances paid to members in accordance with revised arrangements approved by the Treasury.

Dr. H. GUY DAIN presented the report of the pharmacopœia committee. He said that the British Pharmacopœia Commission was preparing lists of drugs to be added to or omitted from the *British Pharmacopœia* in the 1958 edition. The omission of a drug from the *Pharmacopœia* did not preclude its inclusion in the *Codex*; and some drugs left out last time were to be included this time, indicating that ideas of usefulness might change even in five years.

## Medical Disciplinary Committee

The committee began its session on May 30, under the chairmanship of the President. There is to be an additional session in July.

### APPLICATION FOR RESTORATION

*William Arthur Chanmugan Nason* made application for the restoration of his name to the Register. The application was rejected.

### FURTHER POSTPONEMENT

*William Frank Cruickshank*, registered as of c/o Milne, Broxy Cottage, Westmuir, Brechin, Angus, M.B. Glasg. (1935), did not appear for an adjourned judgment and was not represented. In May, 1954, he had been found to have been convicted of being drunk and disorderly and to have been guilty of failing to visit or treat patients, neglecting over a considerable period his duties as a medical practitioner under the National Health Service, and disregarding his personal responsibilities to patients. Judgment was then postponed for a year, but last May the committee found that the evidence so far received concerning his habits and conduct would not warrant it in discharging the case, and judgment was further postponed until the present session.

Mr. G. J. K. Widgery, solicitor to the council, read a letter in which Dr. Cruickshank stated that he was unable to attend. Since judgment had been postponed last May, Mr. Widgery said, there had been a further conviction, when Dr. Cruickshank was fined £15 and ordered to pay costs for being under the influence of alcohol to such an extent as to be incapable of being in charge of a car.

In order to give Dr. Cruickshank a further opportunity of being present, the committee postponed the case until its meeting in July. "In his own interest he should be present on that occasion," added the chairman.

### CONVICTION FOR ASSAULT

Convictions for assaulting Isabella Gourlay Nicol or Whitelaw and conducting himself in a disorderly manner and committing a breach of the peace were admitted by *James Watson Richmond*, registered as of Rosskeen, Kelty, Fife, M.B. Glasg. (1929). He had been fined at the Sheriff Court of Fife and Kinross at Dunfermline £12 on the first charge and £4 on the second, with the alternative of 40 days' and 20 days' imprisonment, to run consecutively.

Mr. Widgery recalled that Dr. Richmond was convicted of similar offences in 1952 relating to three young women who were patients. At the same Sheriff Court he was fined £25. He appeared before the committee in November, 1952, when he said that he was having treatment. Judgment was postponed for a year and then the case was dismissed.

The Chairman announced that the committee took the gravest view of a conviction of this sort, and this was the greater because of the earlier convictions of a similar nature; but in order to give him one further opportunity of reconsidering his habits and conduct it had postponed judgment for two years, until May, 1958. He would be required to appear in May, 1957, and before that date he would be asked to furnish the names of colleagues and other persons of standing to whom the committee could apply for testimony as to his habits and conduct.

### ADULTERY

*Ernest Benjamin Dawe*, registered as of 235, Downham Way, Bromley, Kent, M.R.C.S. (1941), was charged with an improper association with a patient, which had led to his being found guilty of adultery in the Divorce Court. The Chairman announced that the committee found Dr. Dawe guilty of infamous conduct in a professional respect and ordered his name to be erased from the register. This is subject to appeal within 28 days.

*John William Pooley*, registered as of Nunswell House, Boney Hay, Walsall, Staffs, M.B. Birm. (1939), appeared on a charge of infamous conduct in a professional respect.

Mr. John Hobson, instructed by the council's solicitors, read a letter from Dr. Pooley admitting that he had had intercourse with a young woman who was on his list and that he was the family doctor of her father, but denying that he stood in professional relationship to the young woman and stating that it was untrue that he gave her medical treatment. Intimacy arose solely from her being a domestic servant in his house; the fact that she was on his list was wholly irrelevant.

At the close of the case for the complainant Mr. N. Leigh Taylor, solicitor, of Messrs. Hempsons, submitted that there was insufficient evidence of which the committee could find Dr. Pooley guilty, and that the facts were not such as to constitute infamous conduct in a professional respect. Was it possible to say that merely because a person was on a doctor's list there was then a professional relationship? Suppose a person went on a list and had all his treatment privately. Mr. Hobson had referred to Dr. Pooley's obligations under the regulation to treat the young woman as a patient, but that liability only arose if she asked for treatment, and there was no evidence that she did so.

The committee found Dr. Pooley not guilty of infamous conduct in a professional respect.

*Frank Stanley Mellows*, registered as of 63, Hatherley Road, Cheltenham, M.B. Camb. (1948), admitted committing adultery with a patient. The committee found him guilty of infamous conduct and ordered his name to be erased. He has 28 days in which to appeal.

### DRUG OFFENCES

*John Millar Matthew*, registered as of 176, Farley Road, Selsdon, Surrey, M.B. Camb. (1932), was charged with a conviction in 1948 of failing to keep records of dangerous drugs, when he was fined a total of £300; with convictions in 1954 of unlawfully prescribing, supplying, and possessing dangerous drugs, when he was bound over in the sum of £5 for three years; and with a conviction in February, 1956, at the Stevenage Magistrate's Court of driving a motor-car when under the influence of drink or drugs, when he was fined £20, ordered to pay £27 1*s.* costs, and disqualified from driving for five years.

In order to give Dr. Matthew an opportunity to overcome the tendency which led to the convictions, the committee postponed judgment for a year.

### NAME NOT ERASED

In view of the satisfactory information concerning his habits and conduct, which the committee was gratified to receive, it did not direct the erasure of the name of *Ralph Martin Case*, registered as of 71, Gillott Road, Edgbaston, Birmingham, M.B. Birm. (1934). Judgment had been postponed for a year to give him one further opportunity of overcoming his tendency to abuse of dangerous drugs, following a conviction for procuring dangerous drugs in 1953.

### MOTORING OFFENCES

*William James*, registered as of Parc-y-Ddol, College Road, Carmarthen, M.R.C.S. (1942), had had judgment postponed for a year. He had been convicted in 1953 and 1955 of being in charge of a motor vehicle while under the influence of drink. When judgment was postponed last year the chairman said that Dr. James should make every effort to be present when his case was again considered.

The Registrar was not directed to erase Dr. James's name.

### DANGEROUS-DRUG CONVICTIONS

*Joseph Hirschmann*, registered as of Upper House, Clunbury, Craven Arms, Salop, M.B. Dubl. (1920), had had judgment

postponed in respect of convictions in 1953 and 1954 under the Dangerous Drugs Regulations, 1937, and the Dangerous Drugs Act, 1951.

In view of the satisfactory information concerning the doctor's conduct the committee did not direct the Registrar to erase his name from the Register.

BREACH OF THE PEACE

*Robert Lindsay*, registered as of 8, St. Ninian Drive, Inverness, M.B. Glasg. (1945), appeared for postponed judgment following convictions for a breach of the peace in 1951, 1952, and 1955, and one of being found drunk in 1954. Judgment was postponed for a further year.

OFFENCES ASSOCIATED WITH ALCOHOL

Last May the committee was not satisfied that the evidence concerning the habits and conduct of *Patrick Joseph Conlin*, registered as c/o Barclays Bank Ltd., Dudley, Worc., M.B. N.U.I. (1920), were such as to justify them discharging the case at that time. He had been convicted in 1950 of being under the influence of drink so as to be incapable of having proper control of a motor vehicle. The Registrar was now not directed to erase Dr. Conlin's name.

*Joseph John McMenemy*, registered as of Burnside, Bargeddie, Glasgow, L.A.H. Dubl. (1947), was found to have been convicted at the Sheriff Court at Airdrie in 1954 of being in charge of a motor vehicle when under the influence of drink, when he was fined £15 and disqualified for twelve months, and at York City Magistrates' Courts in November, 1955, of driving a motor-car when under the influence of drink, when he was sentenced to three months' imprisonment, ordered to pay £3 3*s*. doctor's fees and £5 3*s*. 11*d*. witnesses' fees, and disqualified for three years. The committee postponed judgment for a year.

*Andrew Francis Amerherst Gallen*, registered as of 20, Orchard Drive, Giffnock, M.B. Glasg. (1932), had been convicted at the Glasgow Sheriff Court in 1954 and 1956 of driving a motor vehicle when under the influence of drink or drugs. On the first occasion he was fined £15 with an alternative of sixty days' imprisonment, and was disqualified for a year. On the second the fine was £30 with three months' imprisonment as the alternative, and the disqualification was for two years. Judgment was postponed for a year.

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## BIRTHDAY HONOURS

THE list of honours published on May 31 contains the names of the following members of the medical profession :

### Baron

Sir HENRY COHEN, M.D. Lpool, F.R.C.P., J.P.
Professor of medicine in the University of Liverpool; for services to medicine.

### Knights Bachelor

SAMUEL PHILLIPS BEDSON, M.D. Durh., F.R.C.P., F.R.S.
Professor emeritus of bacteriology in the University of London.

JOSEPH WELSH PARK HARKNESS, C.M.G., O.B.E., M.B. Glasg.
Medical adviser to the Comptroller for Development and Welfare in the West Indies.

ARTHUR MASSEY, C.B.E., M.D. Leeds
Chief medical officer, Ministry of Pensions and National Insurance.

JAMES WILLIAM TUDOR THOMAS, M.D. Wales, F.R.C.S.
Ophthalmic surgeon, United Cardiff Hospitals.

### C.B. (Military)

Air Vice-Marshal REGINALD HORACE STANBRIDGE, O.B.E., M.R.C.S., R.A.F. retd.

### C.M.G.

THEODORE FARNWORTH ANDERSON, O.B.E., M.D. Camb.
Director of medical services, Kenya.

EDWARD GEORGE SAYERS, M.B. N.Z., F.R.C.P.
Senior visiting physician, Auckland Hospital; for public services.

KENNETH WILLIAM STARR, O.B.E., E.D., M.S. Melb., F.R.C.S.
Councillor of the Royal Australasian College of Surgeons; for services to the medical profession.

### C.V.O.

FRANCIS GALLOWAY LESLIE, B.A. Camb., M.R.C.S.
Physician-in-ordinary to H.R.H. the Princess Royal.

### C.B.E. (Civil)

WILLIAM DONALD WYKEHAM BROOKS, D.M. Oxfd, F.R.C.P.
Consulting physician to the Royal Navy; physician to St. Mary's Hospital, London.

PATRICK WIMBERLEY DILL-RUSSELL, M.R.C.S.
Director of medical services, Cyprus.

GEORGE MATTHEW FYFE, M.B. Aberd., F.R.C.P.E.
Medical officer of health for Fife.

PHILIP D'ARCY HART, M.D. Camb., F.R.C.P.
Director, tuberculosis research unit, Medical Research Council.

JAMES PETER SPEID JAMIESON, M.D. Edin., F.R.A.C.S.
Formerly medical superintendent, General Hospital, Nelson, New Zealand.

HALLAM GREY MASSIAH, M.D.
For public services in Barbados.

GRAEME MITCHELL MILL MENZIES, M.B. Aberd.
Deputy chief medical adviser, federal government, Federation of Nigeria.

LEONARD JAMES TERNOUTH PELLEW, M.B. Adelaide, F.R.C.S., F.R.A.C.S.
For services to the Fire Brigade and other services in the State of South Australia.

HUGH STANNUS STANNUS, M.D. Lond., F.R.C.P.
Medical officer, Board of Inland Revenue.

FRANK EDWARD TYLECOTE, M.D. Manc., F.R.C.P.
Chairman, public-health committee, Association of Municipal Corporations; professor emeritus of medicine, University of Manchester.

ROBERT BRUCE WALLACE, D.S.O., M.C., M.B. Glasg.
For medical services in Kedah, Federation of Malaya.

FRANK CLARE WILKINSON, M.D. Lpool, F.D.S. R.C.S.
Director of Eastman Dental Hospital and dean of Institute of Dental Surgery, University of London.

### O.B.E. (Military)

Wing-Commander JOHN NIGEL CARLYLE COOKE, M.D. Lond., R.A.F.

Colonel JOHN MATTHEW DWYER, E.D., M.B. Adelaide, R.A.A.M.C.

Major MAURICE FRANCIS RONAYNE, M.B.E., M.B. N.U.I., R.A.M.C., T.A.

Lieut.-Colonel ERNEST ALBERT SMYTH, M.B. Dubl., M.CH. ORTH. Lpool, F.R.C.S., R.A.M.C.

Lieut.-Colonel JOHN JOSEPH SULLIVAN, M.B., R.A.M.C.

### O.B.E. (Civil)

EDWARD ARMSTRONG, M.D. Belf.
Senior medical officer, ministry of health and local government, Northern Ireland.

THILLAIAMPALM BALASINGHAM, L.M.S.
Senior lecturer in pathology, University of Malaya.

ENID CONSTANCE EVANS, M.R.C.S.
Senior medical officer, H.M. Treasury.

HORACE PRIMROSE SMITH GILLETTE, M.B. Edin.
Superintendent medical officer (specialist) malariologist, Trinidad.

JAMES KELLOCK HUNTER, M.B. Glasg.
Deputy director of medical services, Uganda.

WILLIAM CHARLES DONALD LOVETT, M.D. Lond.
Senior medical officer, Somaliland.

CYRIL JOHN ALOYSIUS O'KELLY, F.R.C.S.I.
Lately surgeon at the Royal Hospital, Basra.

ALBERT JOHN ORCHARD, M.B. Edin.
Medical practitioner in Christchurch N.Z. for over 50 years.

CYRIL SEYMOUR COODE PRANCE, M.B. Lond., J.P.
Commissioner, St. John Ambulance Brigade for Plymouth, South West Devon, and East Cornwall.

ALEXANDER NOBLE ROXBURGH, M.B. Edin., F.R.C.S.E.
Consultant surgeon, Scottish Northern Regional Hospital Board.

ANTHONY ANDREW RUSSO, L.R.C.P.I.
For medical and public services in Gibraltar.

CHARLES ERNEST SALT, M.B. Birm., J.P.
For public services in Denbighshire.

HOPE TRANT, M.B.E., M.D. Dubl.
Medical research officer, East African Medical Survey and Research Institute.

VERA CECIL VEITCH, M.B. Edin.
Deputy principal school medical officer, Stoke-on-Trent.

### M.B.E. (Military)

Major FREDERICK JACQUES LEON LANG, T.D., M.R.C.S., R.A.M.C., T.A.

Squadron-Leader JAMES ALLEN BOYED MOUNSEY, M.R.C.S., R.A.F.

Surgeon Lieut.-Commander JOHN STUART PEPYS RAWLINS, B.M. Oxfd, R.N.

### M.B.E. (Civil)

JAMES KENNETH CRAIG, M.D. Dubl.
Provincial medical officer, Central Province, Kenya.

ROSINA GWEN DABB, M.B. Edin.
Medical officer in charge of Church of Scotland Mission Hospital, Blantyre, Nyasaland.

ALBERT BENJAMIN FOO, L.R.C.P.E.
Maternity and infant welfare officer, Municipal Infant Welfare Centre, Georgetown, British Guiana.

JOAN INMAN FRANKLIN-ADAMS, M.B. Lond.
For services in Jordan under the Save The Children Fund.

WILLIAM SCOTT, M.B. Glasg.
Admiralty surgeon and agent and medical officer, Royal Navy Torpedo Factory, Alexandria, Dunbartonshire.

WILLIAM ALEXANDER SLOSS, M.B. Edin., F.R.C.S.E.
Member of the committee of management of the Ballarat and District Base Hospital, State of Victoria; for public services.

## Public Health

## HEALTH VISITING

### Working Party's Report

THE working party which has been inquiring into health visiting has now issued its report.[1] The working party was set up under the chairmanship of Sir Wilson Jameson in 1953 by the Ministers of Health and Education and the Secretary of State for Scotland.* Its terms of reference were "to advise on the proper field of work, the recruitment and training of health visitors in the National Health Service and School Health Service." Its report is part of a review of the work, recruitment, and training of domiciliary visitors in the field of health and welfare. An inquiry into the work, recruitment, and training of social workers in this field is now proceeding, under the chairmanship of Miss Eileen Younghusband.

#### FUTURE WORK OF HEALTH VISITORS

The working party concluded that work with mothers and young children, with school-children, and with the tuberculous will continue to be important but that the emphasis will change. More attention should be paid by health visitors to the mental-health aspects of maternal and child care and more help given with the problems of handicapped and maladjusted school-children. On the other hand, inessential duties must be avoided and time concentrated on essentials. The same health visitor should be responsible both for the young child at home and the child at school.

The health visitor must be closely associated with the work of the general practitioner not only in her traditional fields but in relation to care and aftercare generally. She could come to be useful in any part of a family doctor's practice, in the exercise of her proper functions. The working party note with approval the wide support for a domiciliary team of which the family doctor would be the clinical leader, and they believe that the health visitor should play a central part in such teams.

In all her work, the health visitor should have regard to the psychological aspects of what she is doing, and especially in her work with mothers and young children, she can make an important contribution to mental health. It is unlikely that the problems of established mental illness will be in her competence.

It follows from her association with general practice that the health visitor may be in touch with a vastly wider range of families than hitherto. While the working party reject the possibility of an omnicompetent family visitor, they feel that the future health visitor can serve a general purpose in her family visiting. She would act as a common point of reference and source of standard information, a common adviser on health teaching, a "common factor" in family welfare—and to that extent a general-purpose family visitor.

#### THE PRIMARY AIM

Primarily, the report says, the health visitor's functions are those of health education and giving such social advice as will enable the family to benefit from her advice on health. She will carry out her other functions of coöperation with other workers incidentally to her main purposes. She is not to be described as a social worker nor, in general, to practise as a nurse or midwife, and a recognition of her proper status will be important if her work with family doctors is to be fully effective. Again, because of the new link with general practice the health visitor will increasingly be concerned with families where some form of social action is needed. She should be trained, however, to recognise the limitations of her skills in this direction, to see that the appropriate worker is put in touch with the case, and to coöperate in any way required.

#### TRAINING

The working party regard as undesirable, but for some time inevitable, the present three-part training in nursing, midwifery, and public health. Midwifery training could be replaced by a special three-month course. Nurse-training is open to criticism as a preparation for health visiting, but it is still the most convenient means of gaining the essential medical background; and the objections are not insuperable. On the other hand, the total length of training—four years or four years and three months—is likely to deter school-leavers and others who, the working party hope, will be eventually the main source of recruits. They therefore hope that training for health visiting will prove a fruitful source of experiments designed to reduce the length of nurse-training—the main stumbling-block. They strongly support the institution of integrated training courses embodying all the elements of the three trainings essential to health visiting, and designed for health visiting as a career.

The public-health element in the training should take between nine months and a year or the equivalent. It should aim not at covering the whole possible field and producing a finished worker but at introducing the future health visitor to the principles and including as much practice in their application as possible. Special attention should be paid to the mental-health aspects of her work with families, to the problems of coöperation with other workers, and to the techniques of health education.

Arrangements will be necessary for providing further training and retraining of existing staff for their new rôle. If the report's suggestion of a "group adviser" grade for health visitors of exceptional ability is accepted, diploma courses will be needed for future group advisers.

*Organisation of Training*

The working party recommend the establishment of new central training bodies—possibly based on the organisations of the present examining bodies. The new bodies would prescribe the syllabus and arrange examinations, constitute training-centre committees to run courses of training, and approve their arrangements. Some 25 to 35 courses would be needed each year, more than one being run by one committee if necessary. An important function of committees should be the final selection of students.

1. An Inquiry into Health Visiting. Report of a working party on the field of work, training and recruitment of health visitors. H.M. Stationery Office. Pp. 183. 6s. 6d.

* The other members were: Dr. A. BEAUCHAMP, vice-chairman, Birmingham Executive Council; Alderman Mrs. K. CHAMBERS, chairman, Bradford Health Committee and Bradford Executive Council; Miss E. W. HIMSWORTH, county nursing officer, Midlothian and Peebles; Miss E. STEPHENSON, chief nursing officer, Newcastle upon Tyne; Dr. J. F. WARIN, medical officer of health and principal school medical officer, Oxford.

No register of health visitors is recommended but their qualification should continue to be protected by statutory regulations.

Training should be financed from central funds provided mainly by appropriate contributions from local health authorities. A uniform scale of training allowances should be payable by training centres to students willing to serve for a specified period in certain conditions.

### MAN-POWER AND RECRUITMENT

On the standards set by the working party, a target establishment of 11,500 full-time staff—an increase of some 3500 full-time workers—is needed. To meet the need within ten years the number of students trained each year would have to rise from about 640 to 1100. The working party realise that the number of suitable trained nurses likely to be available each year is too small to guarantee expansion. They therefore recommend concentration on direct entrants and the establishment of adequate integrated courses to attract them.

The report advocates a vigorous recruitment policy in which an important place is given to the enhanced status of health visitors, the elimination of inessential work, and better conditions of work and pay.

## Infectious Diseases in England and Wales

| Disease | Week ended May | | | |
|---|---|---|---|---|
| | 5 | 12 | 19 | 26* |
| Diphtheria | 5 | 6 | 6 | 8 |
| Dysentery | 1635 | 1590 | 1664 | 1146 |
| Encephalitis: | | | | |
| Infective | 1 | .. | 5 | 1 |
| Postinfectious | 3 | 6 | .. | 3 |
| Food-poisoning | 234 | 398 | 311 | 269 |
| Measles, excluding rubella | 2176 | 3076 | 3373 | 3234 |
| Meningococcal infection | 28 | 33 | 30 | 32 |
| Ophthalmia neonatorum | 38 | 30 | 41 | 25 |
| Paratyphoid fever | 11 | 19 | 27 | 9 |
| Pneumonia, primary or influenzal | 459 | 461 | 364 | 339 |
| Poliomyelitis: | | | | |
| Paralytic | 11 | 15 | 15 | 16 |
| Non-paralytic | 10 | 11 | 12 | 9 |
| Puerperal pyrexia | 245 | 225 | 243 | 170 |
| Scarlet fever | 778 | 737 | 691 | 553 |
| Smallpox | .. | .. | .. | .. |
| Tuberculosis: | | | | |
| Respiratory | 729 | 705 | 686 | 559 |
| Meninges and C.N.S. | 14 | 12 | 13 | 13 |
| Other | 89 | 91 | 81 | 68 |
| Typhoid fever | 4 | 2 | 1 | .. |
| Whooping-cough | 1844 | 1750 | 1563 | 1351 |

* Not including late returns.

# Conferences and Congresses

## MEDICAL RESEARCH IN THE CARIBBEAN

THE first scientific meeting to be held under the auspices of the newly formed Advisory Committee for Medical Research in the West Indies met at the University College of the West Indies, Jamaica, on April 8 and 9, under the chairmanship of Sir HAROLD HIMSWORTH. The large audience included representatives from seven West Indian territories. 32 papers were presented, 3 being read by title. Many papers were interim reports on current research. The proceedings of the meeting and many of the papers are to be published in the *West Indian Medical Journal*, and there follow summaries of a few of the contributions.

### MAYARO VIRUS

Dr. W. G. DOWNS, of Trinidad, reported that in 1954 his team at the Regional Virus Research Laboratory had isolated a new virus, later called the Mayaro virus, from the blood of 5 febrile patients. They were also able to demonstrate the presence of antibodies to this virus in the blood of a number of Trinidad residents, using an antigen prepared from mouse serum. In the same year the virus was isolated in Brazil and Bolivia, and possibly also in Uganda, but this latter virus may be a close relative rather than the Mayaro virus itself. Nothing is known as yet of its epidemiology or of its importance as a human disease-producing agent, but it is of interest that the virus was not isolated in Trinidad during 1955.

### CONTROL OF MALARIA

Dr. GEORGE GIGLIOLI outlined the investigations which he had undertaken from 1923 onwards into the epidemiology of malaria and blackwater fever in British Guiana. He was able to identify *Anopheles darlingi* and to establish that it was the sole malaria carrier of practical importance in British Guiana. He studied the breeding, biting, and resting habits of this vector, and he noted that acidity of the water in certain areas prevented breeding. But in the cultivated and settled coastal lands of British Guiana (low level, sea defences, immense irrigation canal network, flood fallow, and rice cultivation) control by the methods then available—before the first world war—was impossible.

The advent of dicophane (D.D.T.) brought a new significance to these researches, and the results achieved with its use were more complete than might have been hoped for. Only occasional cases of malaria are now recorded in British Guiana and these are from the far interior, mainly along the Brazilian border. The geological formations inland from the coastal belt, which drain very acid waters, form a barrier to the spread of *A. darlingi*. This, together with periodic application of dicophane to the houses along the alluvial banks of the rivers and smaller water courses, has eradicated this mosquito from the coastal plains and also prevents re-invasion from the forest areas. Malaria is thus a thing of the past in the coastal plain of British Guiana.

Dr. H. P. S. GILLETTE described investigations showing the development of resistance to dicophane by *Aedes Ægypti*. Field observations made during the yellow-fever campaign of 1954 have been confirmed by detailed laboratory work.

### YAWS

Dr. F. J. GOODEY, Dr. C. C. GORDON, and Prof. K. R. HILL (University College of the West Indies) indicated some limitations of the modern methods of treatment of yaws in the field, and described this disease as produced experimentally in the hamster. Detailed long-term observations made in a small closed country community suggested three main points: (1) serological reactions are of little assistance in the control of frambœsia in the community; (2) approved medical methods of control are often both impractical and unsuccessful; (3) a large proportion of frambœsial lesions are not recognised as such. The experimental work suggested that during a remission there is residual latent infection at the roots of the hair follicles. This might explain the exacerbation of the disease at the site of an old scar in human cases. Professor Hill and his colleagues also reported work on some immunological aspects of leprosy.

### VENO-OCCLUSIVE DISEASE OF THE LIVER

Dr. K. L. STUART outlined the clinical features of veno-occlusive disease of the liver.[1] Infants between $1^1/_2$ and 3 years of age are primarily affected by the acute disease, but older children and adults do not escape. Most affected children are not malnourished. In the acute stage, there is a sudden onset of abdominal distension due to a smooth, firm, slightly tender liver enlargement, which is often associated with an acute ascites. Many patients recover rapidly, at least clinically, with or without treatment; but there may be (*a*) rapid death due to liver failure; (*b*) persistence of the disease

1. See *Lancet*, 1955, ii, 1284.

in a subacute form; or (c) clinical recovery with the later development of cirrhosis of the liver. The ætiology has not been finally established but the evidence points to certain bush teas, particularly those made from *Crotalaria retusa* and senecio as being important factors. Coöperation with the veterinarians has proved profitable.

The pathological and histological features were presented by Dr. G. BRAS. The essential change, which he was the first to describe, is occlusion of the small hepatic veins by intimal swelling, with resultant centrilobular congestion and death of the liver cells. Injection of the hepatic veins with radio-opaque material has demonstrated and confirmed the site of the obstruction very beautifully. The vascular change is not found elsewhere in the body. In the chronic stage the cirrhosis which develops is non-portal in type, as distinct from Laennec cirrhosis.

### VOMITING SICKNESS

The pharmacological and biochemical aspects of vomiting sickness and its relationship to ackee poisoning[2] were presented by Dr. P. FENG and Dr. S. J. PATRICK. This condition develops acutely, mainly in young children. Vomiting is not a striking feature but clouding of consciousness always occurs and may proceed to coma. Severe hypoglycæmia is a constant feature. Two polypeptides, hypoglycin A and B, have been isolated from the ackee, and they produce severe hypoglycæmia in animals. In these animals the outstanding clinical features are vomiting, drowsiness, coma, and death. Rats fed on a low-protein-high carbohydrate diet ("a Jamaican type diet") are more sensitive to hypoglycin A than rats fed on a normal diet. In the rat, hypoglycin A reduces the total carbohydrate stores of the body. Liver glycogen falls almost to zero, but muscle glycogen is not greatly affected. Synthesis of glycogen by the liver is impaired. The ackee-poisoned rat converts very little radioactive glucose into muscle glycogen or fat and most is excreted as $CO_2$. Pathologically one of the most interesting findings is destruction of the $\alpha$ cells of the pancreas. The ackee is probably only one of the factors responsible for this condition.

### A NEUROPATHIC SYNDROME

Prof. E. K. CRUICKSHANK discussed the clinical features of a neuropathic syndrome studied at the University College Hospital. The four main features are: (a) upper motor neurone damage; (b) damage to the first sensory neurone; (c) retrobulbar neuropathy; and (d) eighth-nerve deafness. The onset is from the second to the sixth decade and may be sudden or gradual. The sex incidence is equal. Maximum incapacity develops within a few months and the disease thereafter seems to be stationary. The diet of the patients varies from good to very poor, but few show overt signs of vitamin deficiency or malnutrition. A dietary factor is possibly responsible but there is no definite evidence of this. No pathological material has as yet become available for study. This, and the related condition of tropical amblyopia described by Dr. D. W. A. DEGAZON, are by no means rare in Jamaica, and constitute a public-health problem of some importance. On the other hand, demyelinating diseases familiar in Europe, such as disseminated sclerosis, are very uncommon.

### SOME OTHER PAPERS

In the field of malnutrition, Dr. E. H. BACK outlined a nutritional survey amongst small farmers in Jamaica; Dr. B. E. R. SYMONDS described the clinical syndrome of "sugar baby" in Trinidad; and Dr. J. WATERLOW discussed the assessment of protein deficiency in man.

Mr. R. P. M MILES described the high incidence of rectal stricture in the female in lymphogranuloma venereum; Mr. J. S. R. GOLDING gave a survey of bone and joint disease in Jamaica, emphasising sickle-cell disease as a cause of osteomyelitis. Dr. B. B. G. NEHAUL, of British Guiana, described the clinical manifestations of filariasis; and Dr. J. A. TULLOCH discussed certain aspects of diabetes which may be peculiar to the West Indies, and outlined the investigations being carried out.

2. *Ibid.* April 14, 1956, p. 429.

## FERTILITY AND STERILITY

THE Second World Congress on Fertility and Sterility, sponsored by the International Fertility Association, was held at the Congress Palace of the Mostra d'Oltremare, Naples, Italy, from May 18 to 26. It was attended by over 1100 people, representing 68 countries.

### Implantation of the Ovary into the Uterine Cavity

B. S. TEN BERGE (Groningen, Netherlands) discussed whether intra-uterine ovarian implantation should be resorted to in cases where both fallopian tubes are absent. This procedure has been recommended by several gynæcologists, and pregnancies have occasionally followed, though only in a very small proportion of cases. The gynæcologist should not perform this operation unless he is confident that ill effects are unlikely. Harmful complications may include post-operative uterine fistula, which may cause leakage of menstrual blood, with formation of adhesions and resulting pain and discomfort. A further danger is weakening of the uterine wall with rupture due to stretching during an ensuing pregnancy. In 16 patients, in whom this operation was performed, subsequent culdoscopic examination proved the absence of adhesions: to date none of these patients have become pregnant.

### Organic Cornual Occlusion of the Tubes

V. B. GREEN-ARMYTAGE (London) said that it is not uncommon in subfertility cases to get a history of abortion before marriage or in the early years of marriage. Very often in these cases there is cornual occlusion. After excision of the occluded portions, he recommended surgical implantation of the terminal portions of the tubes, with the assistance of solid 'Polythene' rods: these may be brought down into the vaginal canal and left there for six weeks.

### Plastic Operations on the Fallopian Tubes

J. P. GREENHILL (Chicago, Ill.) reported that, from the literature and personal letters from a large number of gynæcologists interested in plastic operations on the fallopian tubes, he obtained data concerning 2113 such operations. There were 405 pregnancies (19%), or 1 pregnancy following every 5 operations. There were only 313 living children or 1 living child after every $6^1/_2$ operations. There was 1 ectopic pregnancy after approximately every 6 operations. While the results are far better than they were twenty years ago, they are still far short of what they should be to justify indiscriminate plastic tubal operations. Furthermore, a high incidence of tubal pregnancies follows these operations.

### Latent Genital Tuberculosis

I. HALBRECHT (Petah-Tiqvah, Israel) investigated 170 cases of tubal occlusion in primary sterility. In 68 of these cases, genital tuberculosis was discovered. Cultures of menstrual and intermenstrual discharges were employed. In 17 out of 27 cases which received combined treatment with streptomycin and *p*-aminosalicylate, there is no evidence of genital tuberculosis four to five years after the treatment.

### Duration of Function of Corpus Luteum

H. H. KNAUS (Vienna) recalled that in 1929 he demonstrated that ovulation takes place on the fifteenth day before the succeeding menstruation, the activity of the corpus luteum normally persisting for fourteen days. In cases of sterility, this activity does not last fourteen days, and in consequence, even when the ovum is fertilised, the conditions for proper implantation are not adequate. There is no real essential regularity of the length of the menstrual cycle, but there is a real regularity of the activity of the corpus luteum.

### Correction of Uterine Retroversion

M. MOORE-WHITE (London) said that the correction of uterine retroversion as an aid to fertility has fallen into disrepute, but if performed for certain indications it is worthwhile. The faulty position of the uterus can hinder access of sperm to the cervix; cause kinking of the tubes at the uterine angles (a condition manifested when carbon dioxide fails to enter the tubes, on insufflation, until the uterus has been elevated); result in œdema both of the uterus and prolapsed ovaries; and be a cause of pelvic pain, backache, and dyspareunia. Operative correction is indicated if manual reposition is unsuccessful, the method varying according to the condition found at operation.

### Iatrogenic Sterility

W. T. POMMERENKE (Rochester, N.Y.) reported an analysis of 9200 consecutive operations in the gynæcological service of a general hospital over a seven-year period, 1948–54. This showed that 2035 (22·1%) of those operations were of such a nature that infertility would have been an inevitable consequence if the women had been otherwise functionally and anatomically intact. True, a significant number of patients had already been doomed to infertility because of age or pelvic disorder. However, the high incidence of sterilising procedures in young women in whom the desire for childbearing is paramount hardly bespeaks the ultimate in diagnosis or treatment. The rightful place of surgery in gynæcology is admitted, but quite apart from other unpredictable sequelæ, sterility may follow as a result of ill-advised or heedlessly radical surgery. The number of absolute indications for sterilising operations is decreasing.

### Urinary Hormone Determinations in Chronic Aborters

M. ROLAND and E. VEPROVSKY (New York City) stated that the value of urinary-hormone determinations in chronic aborters, particularly of pregnanediol, appears to be limited at present—chiefly because we do not know the exact mechanism of progesterone metabolism. The methods now used account for only 20–30% of the converted progesterone. Even this estimated amount appears to be a "pregnanediol complex" which includes pregnanolone as well as different types of pregnanediol. Our interpretation will remain inaccurate and of limited value until we know more of progesterone metabolism. When a sudden drop in the urinary pregnanediol excretion occurs in chronic aborters, particularly during the first trimester of pregnancy, it is usually too late to attempt any type of therapy. When substitutional therapy has been started at the initiation of pregnancy, studies of the urinary hormone excretion may be of considerable value. In habitual aborters where the endometrial biopsy premenstrually demonstrates poor secretory activity, it is advisable to determine whether this is due to a lack of progesterone or to an endometrium which responds poorly to this hormone. The pregnanediol determination, evaluated together with the endometrial biopsy, may aid in ruling out one of these possibilities. Where a lack of progesterone is evident, replacement therapy might be indicated. High doses of oral progesterone were used as therapy in this series.

### Therapeutic Experiments in Female Infertility

A. SHARMAN (Glasgow) stated that until ten years ago he performed tubal insufflations routinely both as a diagnostic and as a therapeutic procedure in all cases of primary sterility at the sterility clinic and in the wards of the Royal Samaritan Hospital for Women, Glasgow. Since then the procedure has been discontinued at the sterility clinic, as a routine measure, so that comparative experiments might be carried out, not only to assess the results of other methods of treatment but also to attempt a critical evaluation of the therapeutic merits of insufflation. A total of 2089 primary sterility patients were followed for twelve months, 893 after insufflation, 253 after the passing of a uterine sound, 286 after bimanual examination, 198 after commencing injections of progesterone combined with œstradiol benzoate, 300 after the oral administration of a mixture of ethisterone and ethinyl œstradiol, and 159 after the oral administration of inert tablets. The pregnancy-rates at the end of the year were respectively, 17·4%, 17·8%, 10·8%, 16·6%, 14·3%, and 12·0%. In a series of nutreated and unexamined patients (355), who were merely interrogated and asked to return after their next period, 3 had no period following their visit to the clinic and were subsequently found to be pregnant (0·8%). Of 301 hospital inpatients, who were treated while the above hormone studies were proceeding, 67 (22·3%) became pregnant within twelve months of their stay in hospital.

### Functional Aspects of Uterine Irritability and Tubal Occlusion

J. A. STALLWORTHY (Oxford) suggested guides to the clinician responsible for advising on infertility problems. (1) Every case should be investigated in full before advising on any one aspect of it. This demands knowledge of the male factor, ovulation, the uterus and endometrium, and tubal function. Unsuspected lesions, such as tuberculosis, will be discovered in this way. (2) Functional occlusion is more common than organic blockage. (3) Unilateral cornual occlusion in the absence of previous surgical intervention is most likely due to uterine irritability. (4) The radiological picture of bilateral functional cornual occlusion is identical with that of organic blockage following postabortal or puerperal sepsis. (5) Repeated negative tests by both insufflation and salpingography are not conclusive evidence of organic blockage. Reassurance, sedatives, and spasmolytics will reduce but not eliminate, errors. (6) The final diagnosis between functional and organic blockage is made only at operation and even then may be difficult. Retrograde insufflation should precede tubal implantation. The pathological report on tissue excised is the ultimate proof—or reproof!

### Bilateral Ovarian Wedge Resection

I. F. STEIN (Chicago, Ill.) followed, for as long as twenty-five years, patients on whom bilateral ovarian wedge resection was performed for bilateral polycystic ovaries. He is convinced that this operative procedure, performed in carefully selected cases which conform to the definite syndrome, restores reproductive function. He stated that in the entire series there has been no recurrence of bilateral polycystic ovaries, nor has there been a single instance of carcinoma of the endometrium. In some instances, as at cæsarean section and at hysterectomy, he has had the opportunity of inspecting the ovaries previously resected, and found them normal in appearance. In a few patients, postoperative fibrous adhesions were observed at laparotomy or by culdoscopy. However, pregnancy occurred despite the ovarian adhesions. He emphasised that the bilateral ovarian wedge resection is the treatment of choice and the beneficial effects are not self-limited but last throughout the reproductive life of the woman.

### Conception Following Tubal-patency Tests or Endometrial Biopsies

G. I. M. SWYER and H. H. FOURACRE BARNS (London) spoke of the prevalent belief that tubal patency tests have a therapeutic as well as a merely diagnostic value. It is further commonly held, they said, that conception is more likely to follow hysterosalpingography, especially if this be carried out with an oily rather than a non-oily medium, than to follow uterotubal insufflation. However, no acceptable evidence in support of these views seems to be available, and they sought to provide this by comparing the incidence of conception in the arbitrarily chosen period of six months following a tubal-patency test (in women with no obvious infertility factors, and with apparently fertile husbands) with that in a similar period following the performance of an endometrial biopsy—for which no special therapeutic value has ever been claimed. The differences in these incidences of conception are of doubtful significance and do not provide clear evidence in support of the above-mentioned beliefs.

### Donor Insemination

P. T. TOPKINS (New York) reported that approximately 80% of regularly menstruating, gynæcologically normal women who undergo donor insemination become pregnant. Conception occurs within six months in almost 90% of successful cases, within three months in almost 75%, and during the first month in about 33% of the cases. If conception does not occur within the first six months it becomes increasingly difficult to attain. The most productive method of determining insemination time is the Ogino-Knaus calculation. Of those who conceive, approximately 15% ultimately abort.

### Functional Significance of the Cervical Mucus

B. ZONDEK (Israel) gave a short review of the physical and chemical properties of the cervical mucus: the phenomena of arborisation with crystallisation of the dried mucus was discussed in detail.

# In England Now

*A Running Commentary by Peripatetic Correspondents*

I TURNED thankfully from the chronic depressives, the neurotic necks, the itching unmentionables to the garden—to my potatoes, poking their tardy way up to the spring sunlight, the lettuces in urgent need of watering, the weed-covered borders already herbaceous to the eye of faith. But I was followed by the tribe—two small girls and two small boys. Eight small feet and eight small hands can undo much in a short time. One of my daughters was soon hard at work pulling up lettuces. She had been impressed by my transplanting efforts a few days before. While I sweated pulling out innumerable weeds among the rows, I cast a friendly eye on my sons digging industriously at the other end of the patch. "Let's plant them here," said one. What, I wondered, was it going to be this time. It soon transpired. Triumphantly the seeds flew in all directions, some into the hole they had dug, many more on to the newly weeded potato patch. They were dandelions.

So Nature redresses the balance impious man presumes to disturb. As in the surgery, so in the garden the best motto is "To watch and admire, not harm or destroy." Mrs. Brown, late that evening, must have been impressed by the philosophical attitude of the doctor she had called to see her, as usual quite unnecessarily. Had she known, the garden soil, still clinging to his shoes, was the clue.

* * *

"I'm afraid you have the wrong number," my mother said in the determined voice of the slightly deaf. I had telephoned to inquire after her health and was about to convince her of my identity, but she went on almost without pausing for breath:

"Isn't it annoying the way they never take the trouble to get the right number for you? I should certainly complain to the operator if I were you. My husband—I should say my late husband—always said people simply won't take the trouble these days. Those operators on the telephone exchange have nothing to do but sit there and get the right numbers, but they always seem to get them wrong somehow. And I expect you're a busy person, aren't you?"

Hurriedly I said, "Yes, I'm the wife of a busy doctor. I haven't much time to spare."

My mother was plainly delighted. "A doctor!" she exclaimed. "Now isn't that strange, one of my daughters is married to a doctor. She lives in Hertfordshire . . . you do too! Well the world is a small place. I wonder if you know my daughter. She's next to the youngest. I have five girls. I did have three boys but unfortunately I lost them all. Have you any children? One girl? My daughter, the one that's married to the doctor has one little girl. What a strange coincidence! Actually her little girl is adopted. Venetia, that's my daughter you know, lost her own baby boy but her husband thinks the world of this child. He simply idolises her but then he would. He's a most charming man. His name is a household word here where I live. You see before he married my daughter he had a practice here in the very road where I live. It was the talk of the whole neighbourhood when they were married. Actually they eloped. Of course it was all very romantic but I can't say I was entirely pleased about it at the time. After all, every mother wants to see her daughter married in white, doesn't she?"

I was about to scream into the telephone, "Mother, how dare you tell all your business to a stranger?" when I realised it was an accusation I couldn't make and anyway I hadn't the chance. She went on

"But as I said, he's the most charming man. I don't know what I would do without him. I certainly wouldn't ever have a night's sleep if it weren't for the tablets he gives me. He's what they call Nature's gentleman, you've heard the expression haven't you?"

I mumbled something in a voice as unlike my own as possible and listened, fascinated while she continued.

"Two of my other girls are married too. But they are as unlike Venetia as it's possible for sisters to be. Both very fair and if I may say so, pretty too. Venetia isn't. She's very dark. I suppose she takes after my side of the family. I don't mean to say she's ugly, far from it. In fact only the other day I came across a photograph of her when she was a baby lying naked on a rug kicking her chubby legs in the air. I must show it to her some time. Mothers aren't supposed to have favourites among their children but you can't help it. When I had my duodenal ulcer, Venetia was the only one I wanted near me. She was the greatest comfort to me. And of course good looks aren't everything, are they my dear?"

Very hot, with a rapidly rising blood-pressure, I said, "I'm afraid I must go now." My mother was at once concerned.

"I'm afraid I've kept you too long. I'm so sorry my dear, but it's been so nice to have a chat. I do hope you get your number right next time."

I watched the clock and let a quarter of an hour slip by before I telephoned her again. This time I left no doubt as to my identity. My mother said

"My dear, I've been thinking about you. A charming girl just got on to me by mistake. The operator gave her the wrong number and would you believe it, she's married to a doctor and lives in Hertfordshire too. I wonder if you know her . . . . . ."

* * *

Wouldst taste the Elixir of Youth, Dr. Faust? Then take a postgraduate course. Dig out the old college scarf, the baggy flannels. Lay in a stock of notebooks, gold-blocked on the cover with the grand old motto: *De predicamento tuo non curo, Jack.* There stands the geriatrics class of '56, huddled at the end of the ward, waiting for the Chief. Sister eyes them warily; at the first bar of "Come, boys, let's all be gay, boys!" she will move in among them with her terrible swift sword. There's Flashman, stuffing a midday edition and a bulldog pipe into the pocket of his tweed jacket; and there's Tom Brown, edging up to that vivacious brunette with the silver threads among the black. "Golden days, when you're young, golden days!" If Tom were not here he might be advising Mrs. Peripatetic: "Keep him in bed a few days more, Mrs. P., and a *very* light diet." *Cave*, chaps, here's the Chief. Done those lines, Flashy? He never forgets.

* * *

In recent months, the attention of pædiatricians has focused on a mysterious disease, hitherto unknown, the protean manifestations of which have been recognised as forming the Davy Crockett syndrome. Pandemic in distribution, equally prevalent in both sexes, and with no respect for site or season, it has become increasingly clear that a new clinical entity has appeared. While the most florid examples of the condition are to be found in childhood, a not uncommon secondary form of the syndrome also occurs in adult life.

This fascinating disease may present in all manner of guises and almost all the special departments of a hospital may meet with one or other of the many clinical variants. In skin clinics, the characteristic coronal distribution of the lesions extending band-wise to the skin of the cervical and upper thoracic spine, should give rise to no difficulty. Outbreaks of spring catarrh and hay-fever, in the absence of both spring and hay, may perplex ophthalmologists and E.N.T. surgeons, whilst allergists may be misled by extraordinary reactions to scratch-testing with the usual allergens. Gastro-intestinal disturbances are not infrequent and a Davy Crockett trichobezoar is a recognised complication. Some of the features of the syndrome have been attributed to an increase in mouse-borne infections on the grounds that the heavy demand for feline fur has left an insufficient number of cats to keep the mouse population down to a sanitary level. Several pædiatricians have expressed the view that enuresis, constipation, and acidosis are also part of the syndrome, but the evidence is not convincing. However, psychological disturbances are certainly encountered and usually take the form of outbursts of aggressive behaviour. It has been shown that, in most cases such behaviour is due to the social inferiority consequent upon *not* possessing a Davy Crockett hat.

* * *

*Overheard in Queen Square.* "You've passed? . . . now you'll have to take the Harryplattic oath!"

# Letters to the Editor

## ANÆSTHESIA IN OBSTETRICS

SIR,—I would like to comment on a few of the points raised by Dr. Coleman and Dr. Day in their interesting article (May 19) and by your annotation in the same issue.

I am not convinced that Coleman and Day have solved, by the method they advocate, the problem which they have posed. The results of their experience with a method involving endotracheal intubation are impressive; but no better than those which should be—and I feel are—obtained by equally competent anæsthetists working with drugs and equipment to which they are accustomed.

Those who claim that vomiting is a perpetual hazard in obstetric cases, however skilfully the anæsthetic be administered, indicate that it is most likely to occur during the induction period—the phrase "stormy induction" occurs with great regularity in the tales of disaster of this class. Yet Coleman and Day make no special provision for this period other than the prophylactic one of having suction apparatus handy. I calculate that, unless the anæsthetist in charge has a medically competent associate working with him in the labour ward or the theatre (a rare event except in teaching units), the time elapsing between application of the anæsthetic mask and inflation of the endotracheal cuff is likely to be more than four minutes. Attempts to hurry induction, or premature attempts to intubate, would merely invite regurgitation or vomiting. You go some way towards making this point in your annotation, but I feel that even so you are too confident about the modification you suggest.

I believe that Coleman and Day introduce an unnecessary hazard into the anæsthetic management of these cases. If the postulate that "the woman in labour presents problems similar to those in cases of intestinal obstruction" is accepted, then naturally the management of each must follow a similar pattern. It is now accepted teaching that a large-bore gastric tube (definitely not a Ryle's tube) should be passed preoperatively on each patient with intestinal obstruction. To comment, as do Coleman and Day, that the passage of such a tube increases the "fear and distress" of the woman in labour is merely to invite the reply "better that than a disasterous induction." The observation of Coleman and Day that "commonly the quantity of fluid and débris recovered is small" must mean that, if the gastric tube was of wide enough bore, the stomach was virtually empty.

There are, however, two other aspects of this question which I consider to be of very considerable importance. Coleman and Day reiterate the long-held contention that during labour the gastric emptying-time is prolonged. I have recently attempted to show,[1] with the help of Dr. F. Hutton, radiologist at the Central Middlesex Hospital, for whose coöperation I am grateful, that this is by no means true. We performed barium-meal examinations on twelve women in established labour, and the times of gastric emptying showed the same range of variation as in the normal subject (from 2 hours to over 8 hours in our series). This generalisation we can apply only to patients who are on fluid or semi-solid diets of the type which should by now be the rule for all patients in labour.

The conclusion to be drawn from this investigation was that the renowned hazard of obstetric anæsthesia is not due to "the inevitable retention of gastric contents in labour." I feel that the important factors are the choice of agents used for induction of anæsthesia and the competence with which the anæsthetist is able to use these agents. Most anæsthetists in this country use thiopentone for induction in the majority of their cases. Yet in their obstetric practice they revert to a sequence of inhalation anæsthetics which in the non-sedated patient invites the hazards that may be grouped under the term "stormy induction." Thiopentone provides a smooth and rapid induction, and, at least in a dose of about 250 mg., exerts no undue depressant effect upon the child regardless of how long the obstetrician takes over the delivery.[2]

The employment of thiopentone is often opposed on the ground that it demands a high standard of professional competency. I feel that no practitioner lacking that degree of competence should be permitted to indulge in obstetric anæsthesia. Although I claim that the method I suggest is the most satisfactory, it would be stupid to deny that any method, willingly undertaken by a competent anæsthetist in a large series of cases, will be associated with a very low disaster-rate.

This of course, as you suggest at the conclusion of your annotation, is the real crux of the matter. I read with great interest Professor Russell's article (May 12) and your editorial comment. I feel very strongly that, just as "dabbling in midwifery must be discouraged, in much the same way as dabbling in surgery is discouraged," so should the employment of an "occasional" anæsthetist be countered as far as possible, and also the application of the "occasional" technique for potentially poor-risk cases (i.e., non-routine inductions for obstetric patients). I have long believed that there should be a general-practitioner anæsthetists' list analogous to the G.P. obstetricians' list. I fail to understand why anæsthetics has been allowed to assume the place it now holds in the curriculum of undergraduates. Students on the general surgical and obstetric "firms" are rarely permitted to do more than assist in the theatre, or to perform a vaginal examination before the obstetrician applies forceps. Yet they are expected to conduct up to twenty major and minor anæsthetic cases (albeit under supervision) and are then encouraged to consider themselves competent to conduct such cases (in hospital or domiciliary practice) as soon as they qualify. Surely it would be enough that undergraduates be given a short course of lectures on anæsthetics and be taught how to maintain the airway of an unconscious patient? This would help to reduce an already overburdened curriculum, and might also possibly enable the senior anæsthetists to supervise more closely the work of their graduate trainees in the labour wards—at least in the daytime. It would also help to discourage general practitioners not on the anæsthetists' list from giving occasional anæsthetics.

To summarise: I suggest that if (*a*) domiciliary anæsthetics (which are mainly for obstetric cases) were given only by doctors who have had postgraduate experience in the specialty, and (*b*) the routine of induction of anæsthesia for obstetric cases in both domiciliary and hospital practice were similar to those used by the individual anæsthetist for the majority of his general surgical cases, we would be much closer to solving this pressing problem than we are likely to get by pursuing some panacea in the form of a fool-proof anæsthetic.

London, W.1. J. SELWYN CRAWFORD.

*** We refer to Dr. Crawford's work on thiopentone levels in an annotation on p. 898.—ED. L.

SIR,—You leave unanswered several important questions in your annotation regarding the future of obstetric anæsthesia.

The problem, as you state, has become increasingly important in the post-war years as one of the major causes of maternal mortality and morbidity in hospital obstetrics. Its dangers can, however, be greatly reduced and strictly circumscribed.

It is possible to conduct the large majority of hospital and almost all domiciliary forceps deliveries under

1. Crawford, J. S. *Brit. J. Anæsth.* 1956, **28**, 201.

2. Crawford, J. S. *Ibid*, p. 146.

pudendal-block anæsthesia. In all outlet forceps and most mid-cavity, including occipitoposterior positions, in the absence of a contracted pelvis, and in breech deliveries this method can be used; and a high percentage of success can be achieved with but little practice. The dangers of inhalation of vomit or regurgitated acid stomach contents are thus entirely avoided.

The best technique for pudendal block has been described by many writers, and consists of injecting 10 ml. of local anæsthetic around the internal pudendal nerves in the region of the ischial spines. It is essential to use a 5-inch, 20-gauge needle and inject at three points, just below the spines, in the nerve canal, and in the greater sciatic notch behind the spines in order to catch all the nerve branches. No further injection is required, and the anæsthesia obtained covers a much greater area than the anatomy books would lead one to expect and lasts long enough to repair the perineum after delivery.

Spinal needles are too short for this purpose, and their base is not sufficiently strong. The needles I use had to be specially made since none was obtainable in London, which would suggest that this technique is not receiving the attention it deserves; and at a recent survey made among candidates at a higher examination I found that less than half had seen a pudendal block and few had performed one.

There is, therefore, at present, ample opportunity of using a safe method of anæsthesia. I would further suggest that all students should be taught the technique of pudendal block and all candidates for higher obstetric degrees should give evidence of having had practice in the method. Experience would be obtained by using pudendal block for normal deliveries, and where the use of forceps is anticipated this will allow early application. Excellent muscle relaxation is also obtained by this means, but the patient usually has to be told to push in the absence of local sensation.

A qualified anæsthetist should, if possible, give the remaining anæsthetics. This is particularly essential where some abnormality is present, such as prolonged labour, for cæsarean sections, or in patients who are fat and thick-set or nervous. All hospitals should be able to arrange for this.

Many modern methods, especially when newly introduced, as you state, can be dangerous, except in the hands of the anæsthetic specialist, and the house-surgeon or anæsthetic registrar should not employ them in obstetrics. For instance, thiopentone in small doses can cause laryngeal spasm and fœtal death from anoxia, and maternal death with an average dose in the presence of anæmia; a closed circuit with certain anæsthetics, and lack of facilities for lung inflation with relaxant drugs, have been seen to result in maternal and fœtal death.

If the domiciliary patient cannot receive a pudendal block, or be brought into hospital, then the help of a qualified anæsthetist should be available and paid for by a domiciliary visit.

These suggestions attempt to answer the questions in your annotation and will go a long way towards lessening the growing dangers of anæsthesia in hospital and domiciliary obstetrics.

London, W.1. D. J. MACRAE.

SIR,—The technique outlined by Dr. Coleman and Dr. Day is a bold attempt to solve an outstanding problem. While I agree with the general principle of employing a cuffed endotracheal tube, I should like to endorse the comments in your annotation—namely, that a quicker induction is probably obtainable with 50% cyclopropane and oxygen, and that intubation should only be performed in the head-up position advocated by Morton and Wylie.[1] I have now seen three cases of massive regurgitation when succinylcholine was administered in the horizontal and head-down positions, but no trouble has so far resulted from the head-up position.

A series of cases such as that described serves only as a pointer to future lines of investigation. The next step is to obtain a properly controlled series of cases comparing the new technique with that of, say, nitrous-oxide/oxygen/ether. It could then be determined whether in fact the technique of Coleman and Day had any advantages over the older method, when both techniques were utilised by experienced anæsthetists. It would become apparent whether the success of the new method was due solely to the technical facility of its originators.

I further suggest that the studies should be extended to include the fœtus. By a method of assessment such as that of Apgar,[2] the effects of anæsthesia on the fœtus can be compared. Only in this way is it possible to obtain a thorough appreciation of such a new technique.

University College Hospital, London, W.C.1. L. KAUFMAN.

SIR,—Your annotation ends with the question "What are students to be taught about obstetric anæsthesia and how are they to be equipped to deal with an emergency in domiciliary practice?" May I diffidently suggest that the answer to this is that they should be taught to give anæsthetics? The revival of this useful but now virtually discarded branch of teaching might even result in the young doctor being able to cope with the baffling problem of providing a few minutes' anæsthesia for a healthy young mother while the forceps are put on.

Windsor. DOUGLAS BELFRAGE.

## FATS AND DISEASE

SIR,—Permit me to refer to Dr. Sinclair's fascinating letter of April 7 and the article by Dr. Bronte-Stewart and his colleagues (April 28), both emphasising the importance of adequate content of essential fatty acids (E.F.A.) in our diet. They involve important conclusions, especially the one expressed by you in your leading article (April 28): "If these results are substantiated, coronary-artery disease becomes in part a preventable disorder—but at a cost of a complete revolution in our present-day dietary habits. The hydrogenation plants of our modern food industry may turn out to have contributed to the causation of a major disease." It can be concluded also that it is wrong to advertise margarines containing hardened fats as properly vitaminised.

Bronte-Stewart et al.'s figures indicate that in a high-fat diet the E.F.A. content of fats should be above 5% if an increase in serum-cholesterol is to be avoided, 15% being adequate or possibly more than adequate. In the diets used, this is equal to above 6 g. and below 19 g. E.F.A. per 2500 calories. With eggs, however, the result is quite different, although they contain much E.F.A. That eggs contain cholesterol may be the explanation.

Shapiro and Freedman[3] showed that the hypercholesterræmic response to cholesterol feeding in rats on a sulphur-deficient protein diet was largely prevented by the use of dietary fat containing E.F.A. A calculation based on their figures shows 16·5 g. E.F.A. per 2500 calories to be adequate.

As to the "etcetera" of Dr. Sinclair's letter, he refers to my letter on hardened fats and lung cancer.[4] I should like to refer also to the further three letters[5] in which I tried to show that the food consumed domestically in the U.K. had a decreasing content of E.F.A. If the diets included in my calculations were representative the average consumption of linoleic acid fell between 1939 and 1952 from about 5 to 3 g. per head per day, and of

1. Morton, H. J. V., Wylie, W. D. *Anæsthesia*, 1951, **6**, 190.
2. Apgar, V. *Curr. Res. Anesth.* 1953, **32**, 260.
3. Shapiro, S. L., Freedman, L. *Amer. J. Physiol.* 1955, **181**, 441.
4. Nyrop, J. E. *Lancet*, 1954, ii, 1288.
5. Nyrop, J. E. *Ibid*, 1955, i, 253, 872, 1178.

arachidonic from 0·8 to 0·3 g. In 1952 the E.F.A. content was about 3·2 g. per 2500 calories. An idea of the human requirements of E.F.A. was indicated by mentioning the 13·3 g. E.F.A. per 2500 calories of human milk. This figure is strikingly close to the figures mentioned above.

Copenhagen. JOHAN E. NYROP.

## LYMPHATIC DRAINAGE OF THE BREAST

SIR,—The pathways of lymphatic drainage of the breast have been studied by intravital methods. Solutions containing iron and patent blue, and in some cases a radioactive tracer, have been injected into the tissues of the breast. A proportion of this is taken up by the lymphatics, thus demonstrating the lymphatics during operation and in cleared surgical and post-mortem specimens.[1]

In addition to the commonly described axillary and internal mammary pathways, lymphatic vessels can be seen to accompany the lateral perforating branches of the intercostal blood-vessels that supply the breast; these drain into the posterior intercostal lymph-nodes lying between the necks of the ribs in close relation to the vertebræ.

Post-mortem examination of the posterior intercostal nodes has shown that they may be invaded by carcinoma of the breast, and there is also evidence that this pathway may be involved fairly early in the spread of the tumour in some cases. If routine postoperative radiotherapy is employed in the treatment of this disease, it would seem rational to include these nodes in the treated area.

Middlesex Hospital, London, W.1. R. T. TURNER-WARWICK.

## DIABETES AND PARITY

SIR,—The data which Dr. Pyke has reported in his article of June 2 are of great interest, and his interpretation of them—that the chance of a woman developing diabetes after the age of 45 increases with the number of children she has had—is probably correct. The alternative explanation—that women who are genetically predisposed to diabetes are more fertile than normal women—must be carefully considered, however, and perhaps Dr. Pyke could report further details of his patients which might help to answer the problem.

Diabetes mellitus has such a high frequency in the population that recurrent mutation alone cannot account for its gene frequency having reached the estimated 15%. It is likely therefore that the diabetic genes confer some biological advantage to counter their loss from the population due to young diabetics failing to reproduce in the generations before insulin therapy was introduced. The disease is usually inherited as a recessive character, and the simplest mechanism by which the polymorphism could be maintained in the population would be by individuals heterozygous for a diabetic gene being generally more fertile than individuals without the gene; data published previously suggest that this may indeed be so, as the parents of diabetics have in several series been found to have more children than do the general population. If the heterozygotes are more fertile than normal people, it would be reasonable to expect diabetics also to be more fertile than normal before they develop the disease, and it would be of great interest to know if Dr. Pyke's data support this expectation or not.

One would expect to find a higher percentage of diabetic women in the higher parity groups, and a lower percentage in the lower parity groups, than is found with normal women; Dr. Pyke's tables II and IV show that this is what he finds. His percentage of nulliparæ (19·6%) is so very much lower than the normal (32·6%) that it would be of interest to know what proportion of them remained unmarried up to the menopause, compared with the proportion found in the nulliparæ of the general population. If the proportions in the two groups are similar it could be regarded as evidence in favour of the explanation of the data being that parity increases the chances of developing diabetes; but if the proportion of unmarried is higher in the diabetic nulliparæ it would favour the hypothesis that the diabetic genes increase fertility.

Heredity Clinic, David Lewis Northern Hospital, Liverpool, 3. R. B. MCCONNELL.

SIR,—Is the apparent "effect of parity" on women due to parity as such, or to the "stress" involved in bringing up more children under present conditions? Is there, I wonder, any difference in the incidence of diabetes in mothers with and without domestic help?

Sanderstead, Surrey. EVE STRATON.

## HOME CONFINEMENTS

SIR,—The four London regional obstetric committees have been concerned for a long time that practitioners who are admitted to the list of general-practitioner obstetricians should have had adequate experience. Since 1948 they have admitted to the list practitioners who have been responsible for 30 confinements within a period of three years or who have held a resident obstetric post.

They have now decided that, save in exceptional circumstances, practitioners who have qualified since Jan. 1, 1951, and who wish to be included in the London list of general-practitioner obstetricians must, as from May 1, 1957, have held a resident house job in obstetrics for a period of six months.

Any applications received before May 1, 1957, will be considered in the light of the standards mentioned in the second sentence of this letter.

J. A. SCOTT
Chairman, London Local Obstetric Committee.

Public Health Department, County Hall, London, S.E.1.

## PARAPLEGIA FOLLOWING SPINAL ANÆSTHESIA

SIR,—Sir Francis Walshe's usual, delightful, pellucid English for once leads him into obscurity. Paragraphs 8 and 9 of his letter (June 2) detract from what is otherwise a logical theoretical argument which arrives at an incontrovertible conclusion: "There is some special risk in spinal anæsthesia."

Had the corpus of anæsthetists been present, as I was, at a symposium in Bangalore in 1946 on Complications of Spinal Anæsthesia, and seen the wardful of paraplegia and spinal osteomyelitis there assembled, they would have arrived at the same conclusion as Sir Francis on the evidence before their eyes.

They would have resolved, as I did, never to introduce foreign bodies into the theca again.

Anæsthetists, Sir Robert Macintosh amongst them, need not "substitute their naïve optimism for knowledge." No further research is needed. Abandon spinal anæsthesia.

London, S.W.3. L. H. LERMAN.

SIR,—This subject is, as the correspondence shows, one fraught with difficulties. Without wishing to add to these, I would like to mention that I have injected into a patient with inoperable carcinoma the phenol-glycerin mixture of Maher [1] into the theca below L5, without any neurological changes whatsoever ensuing. A week later the injection was repeated, this time using phenol-glycerin-water. Whilst the perineal pain for which it had been given was slightly improved, no other neurological changes immediate or remote, were demonstrable.

In addition, I feel that we must go in for some hard thinking regarding the justification of the use of spinal

1. Turner-Warwick, R. T. *Lancet*, 1955, ii, 1371.

1. *Lancet*, 1955, i, 118.

anæsthetics. Whilst I myself am convinced of the greater safety of the extradural nerve block, I fully realise that sometimes a spinal may be either the only possible method or the method of choice. In such a case, where the anæsthetist believes that the possible complications of the method are outweighed by the probable ill effects of not using it, he should have the backing of his colleagues.

London, S.W.15. G. C. STEEL.

### MEDICINES FOR HOSPITAL OUTPATIENTS

SIR,—Dr. Tuckman's letter (May 26) calls attention to an aspect of the health service which has rightly received much publicity in recent months—namely, extravagance in prescribing. There are, however, one or two points with which I cannot agree.

The normal procedure in hospitals is to supply medicines on a time basis—usually a sufficient quantity to last the patient until the next visit to the outpatient department, though in the case of a patient returning for treatment to his general practitioner it is usual to supply medicine for one week only. Generally speaking, the issue of antibiotics to outpatients is very carefully controlled, and I doubt very much whether a similar control can be said to exist with regard to prescriptions issued by general practitioners.

St. Peter's Hospital, Chertsey, Surrey. A. E. GRIMSHAW Chief pharmacist.

### ORAL STREPTOMYCIN IN BACILLARY DYSENTERY

SIR,—I was interested to read Dr. Sangster's article (May 19), showing that oral streptomycin is an effective treatment for sonne dysentery.

During the last three months of 1955 there was an epidemic of Sonne dysentery in this village, in which fifteen families were involved, with 43 individuals with positive stools.

Of these 43, (*a*) 11 were cases of diarrhœa seen by me in an attack, (*b*) 12 gave a history of previous mild diarrhœa to the school medical officer investigating the epidemic, and (*c*) 20 were symptomless carriers, detected when the families of (*a*) and (*b*) had their stools examined. 38 of the 43 with positive stools were school-children or children under school age.

Early in the epidemic an organism isolated from one of the cases was reported as having the following sensitivity reactions in vitro: sensitive to streptomycin, chloramphenicol, oxytetracycline, sulphadimidine, phthalylsulphathiazole; partially sensitive to sulphanilamide and sulphaguanidine; resistant to penicillin, aureomycin, erythromycin, succinylsulphathiazole.

It therefore seemed reasonable to give every case a five-day course of phthalylsulphathiazole, of which stocks were held in the dispensary, in the first instance. And it was decided, after consultation with the M.O.H. of the rural district, to give patients whose fæces remained positive after this treatment a course of oral streptomycin. In the event plain oral streptomycin was not obtainable locally, and 'Guanimycin' (Allen & Hanburys) was used. This preparation contains streptomycin 0·25 g. and sulphaguanidine 2 g. per fluid ounce. The doses given were as follows:

Adults.—Phthalylsulphathiazole 0·75 g. q.i.d.; guanimycin 1 ounce four-hourly to a total of 8 ounces.
Children over 3.—Phthalylsulphathiazole 0·5 g. q.i.d.; guanimycin ½ ounce four-hourly to a total of 4 ounces.
Children under 3.—Phthalylsulphathiazole 0·25 g. q.i.d.; guanimycin 2 drachms four-hourly to a total of 2 ounces.

Of the 42 patients with positive stools who were given phthalylsulphathiazole, 32 remained positive after the course—a failure-rate of just over 75%. These 32 were then given a course of guanimycin with the following results:

*Time (weeks) to become negative* *

| *Under 1* | *1–2* | *2–3* | *3–4* | *4–5* | *5–6* | *6–7* | *7–8* | *8–9* |
|---|---|---|---|---|---|---|---|---|
| 20 | 2 | 0 | 1 | 1 | 2 | 3 | 2 | 1 |

* Until the first of three consecutive negative stools.

Of the 32 cases, 20 became negative in less than one week and a further 2 during the second week, representing a failure-rate of a little over 30%. Of the 10 cases remaining positive after this treatment 7 came from two families who had had clinical dysentery of moderate severity, and the impression was that reinfection was occurring after clearance. (The effect of a repeat course of guanimycin given simultaneously to all the household was not tried.)

The question remains, of course, as to which of the two constituents of guanimycin was responsible for the improved result. It seems reasonable to suppose that it was the streptomycin, because: (1) the organism was reported as being sensitive to streptomycin in vitro, but only partially sensitive to sulphaguanidine; (2) the cases had not cleared after phthalylsulphathiazole, which is said to be more effective than sulphaguanidine in this disease, and which was given for a longer period.

Benington, Boston, Lincs. J. S. RIVERS.

## Parliament

### Medical Problems on the Roads

ON the report stage of the Road Traffic Bill in the House of Commons on May 31, Mr. GODFREY NICHOLSON moved a new clause to give the Minister power to prescribe definite specifications for crash-helmets and to make their use compulsory for people riding or being carried on motor-cycles. Mr. HAROLD WATKINSON, Minister of Transport, said that he could not accept a mandatory clause imposing on him the duty of making the failure to wear crash-helmets illegal. The police advised him that it would not be possible to enforce this. Casualties involving motor-cyclists were 22% higher in 1955 than in 1954. He was impressed with the need to do something about these severe casualties, and if the clause were withdrawn he promised to consider whether a clause could be introduced when the Bill reached the House of Lords to give the Minister permissive powers enabling him, if the voluntary use of crash-helmets did not improve at a satisfactory rate, to make regulations so that the wearing of crash-helmets became obligatory. Any clause which the Government introduced would cover both wearing and standards. Mr. Nicholson withdrew the new clause.

Mr. RONALD BELL moved a new clause providing that diesel vehicles should not be used on any public road in the Metropolitan police district. He was sure that fumes from traffic played a large part in causing respiratory diseases among people in London. The number of non-smokers who died of cancer of the lung was nearly ten times as high in the cities as it was in the country. There could be little doubt that in one way or another that was due to atmospheric pollution. The council of the British Medical Association had called the Minister of Transport's attention to the possible dangers of diesel fumes and had stated that they viewed with alarm the proposal to replace electric trolley buses by diesel-engined buses. The Minister had replied that he could not hold up the normal commercial development of road vehicles without more definite information as to its effect on public health than was at present available. Mr. Bell suggested that it was for London Transport and the Minister to show that this change would not be harmful to the health of Londoners. Mr. MOLSON, parliamentary secretary to the Ministry, said a revolutionary clause such as that proposed by Mr. Bell could be accepted by the Government only if a case for it were fully made out. The effect of diesel fumes was being investigated by the Fuel Research Station and the Medical Research Council. So far there was no evidence that exhaust fumes from diesel-driven vehicles had any measurable effect on the health of those who breathed them. Unless and until research was able to establish the need for something like this clause the Government could not accept the proposal. The clause was by leave withdrawn.

### Safety, Health, and Welfare in Agriculture

On the motion for the third reading in the House of Commons on May 29 of the Agriculture (Safety, Health and Welfare Provisions) Bill, Mr. HEATHCOAT AMORY, the Minister in charge of the measure, said that the alterations made in the Bill during the discussions had

been sound rather than spectacular. The safety regulations under Clause 1 and any orders extending the scope of the Bill under Clause 17 would be subject to an affirmative-resolution procedure, as also any orders made under the new clause for preventing overlapping with the Factories Acts. He had no illusion that by passing the Bill Parliament would automatically achieve its objectives. Everything would depend upon the regulations. This task would be undertaken in earnest and every effort would be made to ensure that the regulations should be effective and sensible.

## QUESTION TIME

### Registration of Medical Auxiliaries

IN answer to a question Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said that the Minister did not propose to publish the report of the working party set up to inquire into the possibilities of State registration of medical auxiliaries, since it was prepared for confidential circulation only. He was considering the views of all the bodies concerned and hoped to make a further statement soon.

# Obituary

## WILFRID PATON PHILIP

M.C., M.B. Aberd., Hon. M.A. Camb., D.M.R.E., D.P.H.

FOR 36 years, until his retirement last year, Dr. Paton Philip had been responsible for the tuberculosis services of the county, city, and university of Cambridge. He will be especially remembered as a pioneer in the use of X rays, for he was one of the first to appreciate the value of the proper screening of patients.

He was born at Stonehaven and he studied medicine at the University of Aberdeen. After graduating M.B. in 1912 his first posts were in Merseyside, where he served as house-officer in the Stanley Road Hospital, Liverpool, and later as assistant tuberculosis officer and bacteriologist at Bootle. During the 1914–18 war he served with the R.A.M.C. and won the Military Cross. Soon after demobilisation he went to Cambridge, at first as assistant medical officer at Papworth Village Settlement. In 1919 he succeeded Sir Pendrill Varrier-Jones as tuberculosis officer to the county. A few years later he began to use X rays for diagnosis, and G. L. C. recalls how "in those difficult days of administrative control by small and poor local government authorities, Philip's first apparatus in the then tuberculosis dispensary was bought out of his own pocket—and he was an Aberdonian." In 1929 he took the D.M.R.E. and in 1931 the D.P.H.

He renewed his early association with Papworth when he became physician to the settlement, and his special interest in preventive medicine and in diagnosis was of great value to the Cambridge University Health Service. With the establishment of the National Health Service he became consultant in chest medicine to the East Anglian Regional Hospital Board and he was also consultant chest physician to the United Cambridge Hospitals. In recognition of his work the university in 1950 conferred on him the honorary degree of M.A., and in the same year he was elected a fellow of the American College of Chest Physicians. Two months ago, soon after his retirement, his colleagues and associates in teaching gave him a presentation "in token of their gratitude and affection."

A. L. B. writes: "Philip was by nature an artist, with all the advantages and some of the disadvantages of the artistic temperament. There can be few physicians in the long history of medicine who were so well beloved as he was by his patients and his fellows. He had, like all great clinicians, that sixth sense which led him to the true heart of a difficult case. The mere words 'P.P. does not think so' were enough to dispose of alternative diagnoses. He was a big man physically, of striking appearance, and always well dressed. His emotions were easily aroused, and it could be an embarrassment to walk down King's Parade with him while he discussed, with a wealth of gesture, some rare case. His temperament was such that he found official rules and regulations particularly irksome, and the unfortunate officials whose duty it was to administer them sometimes felt the weight of his anger. His oratory on such occasions was impressive. For a long time I represented 'the Ministry' in his mind and so I, perhaps better than most men, can pay tribute to his selflessness. In all the years I knew him he never sought anything for himself, other than recognition of the importance of the work on which he was engaged and proper provision for this. It was fortunate that in the latter years of his life, when his clinical skill and wisdom were at their peak, he was given membership of the University, consultant status in the National Health Service, and an in-patient unit of his own. I think that he would have agreed that the last ten years were the happiest of his professional life. Now it has ended, and we in Cambridge mourn the loss of a man who did so much to maintain the reputation of medicine and the standing of the physician."

Dr. Philip leaves a widow, two sons, and a daughter.

## NORMAN DARROCH BEGG

M.D. Aberd., D.P.H.

Dr. Norman Begg, director of the European region of the World Health Organisation, died in London on May 23, after a short illness, at the age of 49. At the closing meeting of the World Health Assembly in Geneva tribute was paid to his work.

He was born of Scottish parentage at Kuling, China, and educated in Aberdeen, where he graduated M.B. in the University in 1929. He took the D.P.H. in 1932 and joined the fever-hospital service of the London County Council in 1934 at the North-Eastern Fever Hospital. A year later he went to Southend-on-Sea as medical superintendent of their fever hospital, where he also acted as epidemiologist on the staff of the medical officer of health and was much in demand for domiciliary consultation. In 1937 he returned to the L.C.C. service as medical superintendent of the Eastern Fever Hospital at Homerton. As with other London fever hospitals, a section was set aside for air-raid casualties. The district was heavily bombed on many occasions and Begg faced courageously and with conspicuous success the many demands on his administrative and clinical skill.

From the early days of the war he had applied repeatedly to be allowed to join the medical services of the Armed Forces, but he was required to continue his civilian work. In 1945, however, when the air-raids on London ceased he was permitted to accept an invitation from the United Nations Relief and Rehabilitation Administration to work in Poland. His secondment was in the first place for one year, but it was extended year by year until 1948 when the fever hospitals were transferred to the regional hospital boards. Shortly before this Begg had been appointed medical superintendent of the North-Eastern Fever Hospital; but he never took up the post, and in 1948 he resigned from the hospital service to accept an appointment with W.H.O. which had just been established. He remained in Poland for some time and was later appointed chief of W.H.O.'s special office in Europe, with responsibility for the reconstruction of the health and hospital services in the war-devastated countries of Europe. After the decentralisation of the work of W.H.O. into regions in 1951 he was appointed director of the regional office for Europe, which included several countries in North Africa and the Near East. His post was one of the most difficult in public-health administration. Most countries in the region are not, like those in other parts of the world, preoccupied with the need to obtain outside assistance in developing health services from an existing rudimentary level. Each has already reached a high level of development in health work; their future advance cannot be based merely on the lessons of experience elsewhere. It was the recognition of this that led him to plan a European programme which differed sharply from the activities in other regions. It was characterised by coöperative activities from which the health workers of many countries benefited, rather than assistance which benefited only a particular country. It concentrated especially on the interchange and spreading of knowledge and practice within Europe, and the international seminars, which were a prominent

feature, have had a remarkably fertilising effect on many aspects of health work in European countries. The withdrawal of the Eastern European countries from W.H.O. was a matter of deep regret to Begg. He knew from his own earlier work in Poland how much both W.H.O. and the countries which withdrew had to gain by continued participation. He was always confident that in time the "inactive members" would return, and he did everything he could to prevent anything being said or done on either side which would make that impossible. It is tragic that he should have died when negotiations are taking place which make likely the early return of the Eastern European countries to active work with W.H.O.

A. D. writes: "Norman Begg was one of several Aberdonians who were prominent in the L.C.C. fever service. One of them, Andrew Topping, who always had the highest regard for Begg's ability, urged me to second Begg for work in Poland. I recall that when an extension of his secondment was under consideration Dr. Martha Eliot, of the Children's Bureau, Washington, who had just returned from a visit to Poland, told me that Begg had more influence in Warsaw than any other person from the Western countries. His work for UNRRA and W.H.O. brought him into contact with a host of people of many nationalities. He was genial, friendly, and highly esteemed by all with whom he had official relationship, including his own office staff, who were devoted to him."

"Bright blue eyes and a dark complexion," writes an ex-colleague, "gave Norman Begg a striking and handsome appearance. As he listened in silent scrutiny, one's lucid exposition began to seem—what it so often was—mere incoherent and irrelevant babbling. Many of his colleagues found this daunting, but all recognised the value of his work and his ability as an epidemiologist and medical administrator. In the treacherous cross-currents of post-war Warsaw, Begg's obvious competence, impartiality, reticence, and persistence earned the respect of all the warring interests. Later, as the first director of W.H.O.'s European regional office, he began a long struggle to remove the office from Geneva, where—in his view—it was too much overshadowed by headquarters, and to give it a physically independent existence. The decision last year to move it to Copenhagen was in part a tribute to his success as its director and must have given him great satisfaction."

G. R. H. writes: "Norman Begg had a combination of qualities which is unusual, especially in a physician. He was an excellent administrator and at the same time a man keenly interested in scientific developments relevant to medicine. As an administrator he was completely free from the faults of the bureaucrat, and his wide interest in scientific developments always carried with it the practical question 'What may the development of this knowledge one day make possible for public-health practice?' When he was appointed to his important international post he was young and comparatively unknown in public-health circles in his own country. Many doubts were expressed when he was chosen; but not by those who knew him. He filled it with great distinction. He had an extraordinary combination of far-seeing vision, quiet unruffled administrative efficiency, and deep modesty. He had no idea what a remarkable man he was and that he was making a greater contribution to European unity than any politician. His early death is a serious setback for international health work in Europe. It is a personal loss to those who knew him and worked with him."

### ELEANOR JOYCE PARTRIDGE
F.R.C.S.

Dr. Joyce Partridge, who died on May 11 in Switzerland, was born in Devon in 1893 and was educated at Bedford High School. She studied medicine at the Royal Free Hospital, qualifying in 1917. After holding posts at the Royal Free Hospital and the Elizabeth Garrett Anderson Hospital she took the F.R.C.S. in 1921. Later she went into general practice, and her growing realisation that many of her patients needed more than medicine and surgery to get them well led her to study psychology and especially the methods of C. G. Jung. She joined the staff of the Tavistock Clinic, and became a member of the Society of Analytical Psychology. Shortly before the late war she moved to Devon and began to practise as a psychiatrist in Exeter. Later she combined her consultant practice with the medical directorship of Lympstone Grange Nursing-home and the appointment of visiting psychiatrist to Withymead Centre at Exeter.

E. A. N. writes: "Joyce Partridge was a very real person first and a psychiatrist second. I had known her as a friend and colleague for close on eleven years, and during that time I had come to see something of the wisdom and calmness which she brought to her work. She was never hurried and she gave of her best to her patients striving at all times to make them feel that they were worthwhile people. Perhaps one of the things I remember best about her was her insistence on the rhythm of life. She felt strongly that in this world of rush there must be real times of relaxation to balance the periods of stress and work. The problem of death was no problem to her. When the apple was ripe it fell. Those of us who knew her and mourn her loss know that she would have felt that there was a rightness about her death, and in her own words, 'It was just part of God's pattern.'"

She is survived by her husband, Mr. Edward Wenham, whom she married in 1931, and by one daughter.

### JOHN CHRISTOPHER EYRE PESHALL
M.A. Camb., M.R.C.S.

Dr. Peshall, who died on May 30, at the age of 35, was the only son of the Rev. C. J. E. Peshall, D.S.O., a former archdeacon of the Fleet. He was educated at Stowe, Trinity College, Cambridge, and St. Thomas's Hospital. After qualifying in 1944 he went as medical officer on an expedition to Antarctica, and on his return he was for a time one of the resident medical officers at the General Lying-in Hospital, York Road, London. He was also a surgeon lieut.-commander in the R.N.V.R. In 1952 he joined a general practice in Bermondsey, and recently he had taken over the editorship of the gazette of the South London faculty of the College of General Practitioners.

W. B. M., one of his partners, writes: "Chris Peshall entered into the busy round of medical work with boundless zest and energy. He was particularly interested in geriatrics and took endless trouble in helping many elderly folk, often taking them out in his car while on his rounds. The secret of his happy life was a simple faith in God which reflected itself in all his doings."

Dr. Peshall leaves a widow and two young sons.

## Appointments

BARR, MARGARET N., M.B., B.SC. Edin., F.F.A. R.C.S., D.OBST.: research asst. in anæsthetics, Queen's College, Dundee.

BERNSTEIN, CYRIL, M.R.C.S.: medical registrar, Bath group of hospitals.

CANTRELL, G. L., M.B. Manc., D.O.: consultant ophthalmic surgeon, Exeter clinical area.

ROBERTS, MAIBEN A. W., M.B. Dubl., F.R.C.S.I.: M.O. (surgical specialist), Sarawak.

**Manchester Regional Hospital Board:**

BOUND, J. P., M.D. Lond., M.R.C.P., D.C.H.: consultant pædiatrician, Blackpool and Fylde group of hospitals.

FORRESTER, R. M., M.B. Camb., M.R.C.P., D.C.H.: consultant pædiatrician, Wigan and Leigh Hospitals.

KIRWAN, ROSALIE M., M.B. N.U.I., D.P.M.: asst. psychiatrist, S.H.M.O., Lancaster Moor Hospital.

ROBINSON, W. A. M., M.B. Lpool, D.P.M.: consultant psychiatrist and medical superintendent, Whittingham Hospital, and Blackpool and Fylde Hospital Centre.

WRIGHT, J. K., M.B. Manc., F.R.C.S.: consultant orthopædic and traumatic surgeon, Blackpool and Fylde group of hospitals.

## Births, Marriages, and Deaths

### BIRTHS

LICHTER.—On March 8, in Johannesburg, to Heather (née Lloyd) and Ivan Lichter—a son, Barry Michael.

STOWERS.—On May 28, at Maryfield Hospital, Dundee, to Mary (formerly Alabaster), M.B., wife of John Stowers, M.D., M.R.C.P.—a son.

# Notes and News

## CHANGES IN SOCIAL RESPONSIBILITY

In a Cantor lecture to the Royal Society of Arts on May 29, Dr. Roger Tredgold pointed out that some people who speak of the decline in social responsibility do so with "righteous indignation"—a mixture of anger and self-complacency not uncommon in our society—while others are indulging in the tendency to praise the past at the expense of the present. Criticisms of this kind give pleasure to the speaker, and flatter his pride by the implication of his own admirable social responsibility; but their effects on the listener are not pleasant at all: they are accepted very seldom and acted on less.

Admittedly there are no direct statistics, and no yardstick; so no final diagnosis of the situation is possible. But, in their patients' interests, doctors are often obliged to recommend some treatment before their diagnosis is final. One may indulge, therefore, in a little speculation.

Social irresponsibility, Dr. Tredgold felt, occurs in two forms: (1) in people whose early upbringing is so deficient in affection that adequate social relationships cannot be formed (the antisocial psychopaths—known variously to other authorities) and (2) in those who can respond to environmental influences and in particular to the expectation in the family, at school, and in the various media of communication. The late war, for instance, showed that a changed expectation can awaken and satisfy social responsibility. The individual "has felt loyal, and been heroic." Unfortunately, this expectation is now less: we have lost sight of individual responsibilities in our proper desire for individual rights. "'No rights without responsibilities' would be a better slogan than many which have won an election."

On the whole, therefore, Dr. Tredgold was compelled to conclude that in this country "the responsibility of each of us for the welfare of each other citizen" is getting less. Among the reasons for this he put "the break-up of many families: the lessened skill and security of both parents and teachers; the lessened influence of the citizen who is responsible on him who is not, and conversely the greater influence of irresponsible and self-centring propaganda by press, wireless, and other means, and so the lack of expectation of responsibility in the community"; and finally the misuse of leisure. These conditions, he thought, are increasing in their scope and power, and will do so faster as social irresponsibility increases. There is then a vicious spiral.

Are we, he asked, aware of this? "The majority are unaware and complacent; a minority has some vague sense of it, and is anxious and ill at ease. But this anxiety, tragically, leads to no appropriate action; indeed it does the reverse, for it may well lead, as we have seen, to criticism, anger, and superiority. And this is unlikely to cause anything but stubborn ill will, and a hardening into self-interest, self-righteousness, and perhaps a narrow loyalty to a small group." In international relations the same lack of responsibility towards other people is reflected: national interests are consistently put first, just as within nations the interests of small groups are preferred to the nation's. The truth that "charity begins at home" is often used to mean "charity stops at home."

Among the remedies he proposed, Dr. Tredgold put first the improvement of the quality of parenthood. "We must try to inculcate the idea that we are no more born good parents than we are born good children. We must recognise that it is a skill and not just 'mother love': factors which influence development are there to be studied, and a skill is there to improve with practice." Secondly teachers must be selected and trained to be more secure than now, and more skilled: "can anyone feel that the average teacher's value to society is in any way reflected in his or her possible earnings?" Thirdly, the State should not financially penalise parents who want to send their children to public schools where social responsibility is taught. And fourthly, as individuals and as members of professions, each must do what he can to influence public opinion, and those who mould it, so as to increase a sense of responsibility where possible—an up-hill task. "We must try to get recognised those trends which decrease responsibility in childhood, adolescence, military service, work, and leisure. But we must also ensure that this recognition does not lead to pontifical criticism." As a final slogan the lecturer suggested "No criticism without construction."

## THE RIGHT SORT OF APPEAL

Mental hospitals all over the country are short of nurses, and everywhere efforts are being made to attract suitable men and women to this worth-while profession. The booklet which has lately been issued by a Birmingham hospital management committee is an example of stimulating recruiting technique. *The Story of Mental Nursing and of Rubery Hill and Hollymoor Hospitals* shows the variety of work in a mental hospital today. As the well-chosen illustrations make clear, the hospital itself is a complex organisation run by a mixed team, including doctors, nurses, tradesmen, typists, and therapists. It is also backed by the mental-health services of the city of Birmingham which offer aftercare to the patient who has returned to his home. The booklet thus shows a community doing its best to deal with a community's problem; it is a persuasive appeal to others to share this responsibility.

## FAMILY PLANNING ASSOCIATION

At the annual general meeting of this association on June 2 Sir Russell Brain, P.R.C.P., was elected president in succession to the late Lord Horder. Addressing delegates from more than 200 branches, Sir Russell said: "It seems to me that there can be few Associations in existence which have such opportunities of contributing to human happiness as this, and I mean that in two senses, the happiness of the individual in contributing to the security of happy married life, and in the broader sense of human welfare. I believe that we are faced, at present, with a crisis in the evolution of the human race and unless we can solve the population problem the consequences will be really disastrous." Mrs. Pandit, the High Commissioner for India, who also spoke, said that in India the problem was not one of propaganda but of machinery and of the need for a simpler contraceptive. Each State now had a long-term programme; though population must go on increasing before this could have any effect, at least a start had been made.

## HOME FOR HANDICAPPED WOMEN

The Oxfordshire branch of the British Red Cross Society has opened a home for physically handicapped women, aged 16–40, at Andrew Duncan House, Shiplake, near Henley-on-Thames. Admission is on medical recommendation, but mental defectives or those with fits or incontinence are not accepted. The cost is 5 guineas a week. Full information can be obtained from the County Civilian Welfare Officer, British Red Cross Society, 101, Banbury Road, Oxford.

## APPROVED NAMES FOR DRUGS

The British Pharmacopœia Commission has issued the following supplementary list of approved names:

| *Approved name* | *Other names* |
|---|---|
| Chlorotrianisene | Tri-(*p*-methoxyphenyl) chloroethylene. Tri-*p*-anisylchloroethylene. TACE. |
| Edetic Acid | Ethylenediamine tetra-acetic acid. |
| *Levorphanol | (−)-3-Hydroxy-*N*-methylmorphinan. Levorphan. Dromoran is the tartrate. |
| Mephentermine | *N* : α : α-Trimethyl-β-phenylethylamine Mephine. |
| Meprobamate | 2-Methyl-2-propyl-1:3-propanediol dicarbamate. Equanil; Miltown. |
| Mercaptopurine | 6-Mercaptopurine. Puri-nethol. |
| Methyprylone | 3:3-Diethyl-5-methylpiperidine-2:4-dione. Noludar. |
| Nitrofurantoin | 1-(5-Nitro-2-furfurylideneamino) hydantoin. Furadantin. |
| Nystatin | An antibiotic produced by *Streptomyces noursei*. Mycostatin. |
| Phensuximide | *N*-Methyl-α-phenylsuccinimide. Milontin. |
| Pyridostigmine | 3-Dimethylcarbamoyloxy-1-methylpyridinium. Mestinon is the bromide. |
| Sodium Calciumedetate | Calcium chelate of the disodium salt of ethylenediamine tetra-acetic acid. |

* Replaces levorphan as the approved name.

### AMENDMENTS

The approved name methœstrol is withdrawn and the entry under promethœstrol amended as follows:

| | |
|---|---|
| Promethœstrol | 3 : 4-Di-(4-hydroxy-3-methylphenyl) hexane. Methœstrol. |

### THE CAMBRIDGE LONG VACATION

In his report on the Cambridge medical school for 1954–55, Sir Lionel Whitby, the regius professor of physic, mentions that the facilities offered to medical undergraduates during the long vacation now cover not only the preclinical and transitional periods of study "but also provide unique opportunities for continuing a general education in the arts." The faculty of modern languages gives elementary courses of 24 lectures in German, Russian, French, and Italian, designed to give science and medical students a working knowledge of the language, and also more advanced courses. Similarly, the faculty of English arranges for students in scientific faculties a special series of lectures in English literature and poetry. In both faculties the courses are open without fee to all medical students in residence.

### A NEW INDIAN HOSPITAL JOURNAL

THE second issue of the *Journal of the J. J. Group of Hospitals and Grant Medical College* appeared in April. It is to be published quarterly and papers should be submitted to the hon-secretary of the journal, J. J. Hospital, Byculla, Bombay, 8. The editor is Dr. J. G. Parekh

### University of Cambridge

On May 26 the degree of M.B. was conferred on D. J. Blomley and (by proxy) on R. B. Bennet.

### University of London

Dr. W. S. Peart, senior lecturer at St. Mary's Hospital Medical School, has been appointed to the university chair of medicine at the school.

Dr. Peart graduated M.B. with honours from St. Mary's in 1945 and took the M.R.C.P. the following year. With a Medical Research Council studentship he was attached to the department of physical chemistry at St. Mary's. Later he was appointed junior lecturer in the medical unit there and last year he became senior lecturer. He has published papers on splenic sympathin, phæochromocytoma, and hypertensin.

### University of Liverpool

Mr. I. W. MacPhee has been appointed to a senior lectureship in the department of surgery.

### Queen's University, Belfast

Sir Frank Montgomery, F.F.R., has been appointed pro-chancellor of the university. Dr. K. W. Newell has been appointed lecturer in preventive medicine and Dr. W. H. T. Shepherd part-time lecturer in radiology.

### University of Western Australia

The following appointments to chairs in the newly established medical school of this university are announced:

Dr. D. C. SINCLAIR, university demonstrator in human anatomy in the University of Oxford, to the chair of anatomy; Dr. E. G. SAINT, director of the clinical research unit in the Royal Perth Hospital, Western Australia, formerly of the staff of the department of industrial health, King's College, Newcastle upon Tyne (medicine); Mr. N. F. STANLEY, D.SC., director of the institute of epidemiology and preventive medicine and director of microbiology, Prince Henry Hospital, Adelaide (microbiology); Mr. GORDON KING, F.R.C.S., F.R.C.O.G., at present professor of obstetrics and gynæcology in the University of Hong-Kong (obstetrics and gynæcology); Mr. C. W. D. LEWIS, F.R.C.S., senior assistant and senior lecturer in the surgical unit, Welsh National School of Medicine (surgery).

### Royal College of Surgeons of England

A limited number of tickets (£2 10*s*.) for the Buckston Browne dinner on July 11 will be available to fellows and members. Applications should be sent immediately to Mr. W. F. Davis, deputy secretary of the college, Lincoln's Inn Fields, London, W.C.2.

### Ryle Memorial Prize

The Medical Association for the Prevention of War is offering a prize (£75) for an essay from a doctor or medical student on a World Approach to Human Survival and Health. Further particulars were given in Dr. Glaister's letter in our columns (*Lancet*, April 21, 1956, p. 509).

### United Kingdom Committee for Poliomyelitis

At a meeting held at the Royal College of Physicians of London, representatives of medical and lay organisations agreed to found this committee with the object of "contributing to the study of all the problems arising from poliomyelitis and especially those relating to its prevention and treatment." Sir Russell Brain, P.R.C.P., was elected chairman of the committee and Dr. W. Ritchie Russell, hon. secretary.

### Research into Ageing

The Ciba Foundation is offering five awards (£300 each) for papers on research "relevant to basic problems of ageing." Entries should reach Dr. G. E. W. Wolstenholme, 41, Portland Place, London, W.1, not later than Jan. 31, 1957.

### International Congress of Internal Medicine

This year the International Society of Internal Medicine will hold their congress at Madrid from Sept. 19 to 23, under the presidency of Prof. C. Jiménez Díaz. The programme includes discussions on the present situation of internal medicine, the rôle of the adrenals in the pathogenesis and evolution of internal diseases, and bronchial asthma and emphysema. The address of the secretariat is Hortaleza 90, Madrid.

### Medical Golfing Society

At the summer meeting of this society, held at Swinley Forest, the *Lancet* cup (scratch medal) was won by Mr. R. H. Maudsley (6) with a score of 74.

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CORRIGENDUM: *Aldosterone.*—The initials of Dr. Ivor H. Mills were given incorrectly in the letter by Dr. Garrod and his colleagues last week.

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## Diary of the Week

JUNE 10 TO 16

### Monday, 11th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. A. F. Foster-Carter: Broncho-pulmonary Anatomy.
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Queen Charlotte's Hospital, Goldhawk Road, W.6
4.30 P.M. Mr. H. MacLennon: Contracted Pelvis and Disproportion.

### Tuesday, 12th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry.* Dr. W. Mayer-Gross, Dr. D. M. Leiberman, Dr. M. Shepherd: Pharmacological Approach in Psychiatry.
WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, W.2
5 P.M. Prof. Ronald Hare: Transmission of Infections of the Respiratory Tract. (Almroth Wright lecture.)
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. G. C. Wells: Drug Eruptions.

### Wednesday, 13th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Dr. Derrick Rowley: One Aspect of Natural Immunity.
INSTITUTE OF CARDIOLOGY
5 P.M. (1, Wimpole Street, W.1.) Dr. Wallace Brigden: Rare Forms of Myocardial Disease. (St. Cyres lecture.)
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M. (Hammersmith Hospital, W.12.) Prof. W. C. W. Nixon: The Maternal Services in the Future.
INSTITUTE OF DISEASES OF THE CHEST
5 P.M. Dr. C. M. Fletcher: Coalminers' Pneumoconiosis.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Mycotic Disease.

### Thursday, 14th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. C. Marks: Surgical Sequelæ of Bilharzial Disease. (Hunterian lecture.)
ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology.* Mr. D. P. Greaves, Dr. J. Gloster: Some Ocular Effects of Diencephalic Stimulation in Experimental Animals.
UNIVERSITY COLLEGE, Gower Street, W.C.1
5.15 P.M. Dr. Roy P. Forster (Dartmouth College, New Hampshire): Active Transport in Cells of Mammalian Renal Tubules Studied in Vitro.
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M. (Hammersmith Hospital, W.12.) Prof. G. G. Lennon: Cæsarean Section.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. H. Haber: Cytodiagnosis in Dermatology.
NUFFIELD ORTHOPÆDIC CENTRE, Oxford
8.30 P.M. Mr. J. H. S. Scott: The Fractured Scaphoid.
HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Prof. G. L. Montgomery: Morbid Anatomy of Coronary-artery Disease.

### Friday, 15th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
10 A.M. Prof. J. C. Goligher: Carcinoma of the Rectum.
4 P.M. Prof. C. N. H. Long (Yale University): Experimental Obesity.

### Saturday, 16th

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Chelsea Hospital for Women, S.W.3
11.15 A.M. Prof. Ian Donald: Infertility.

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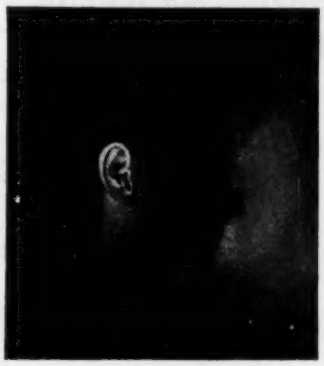

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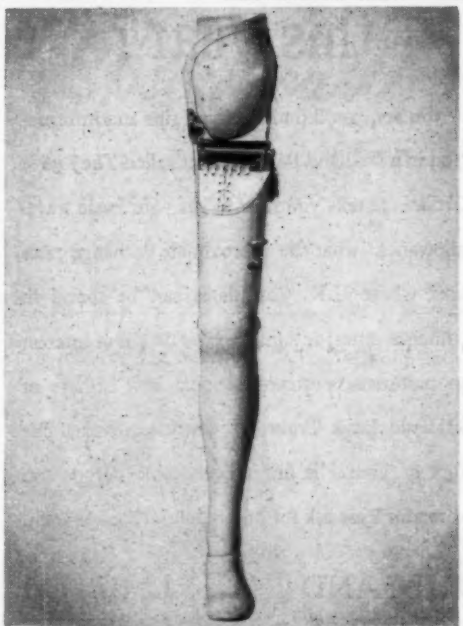

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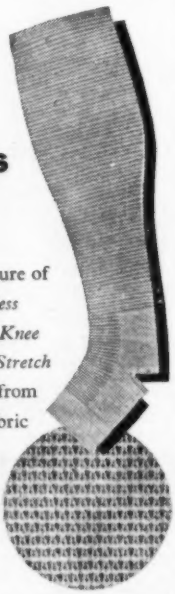

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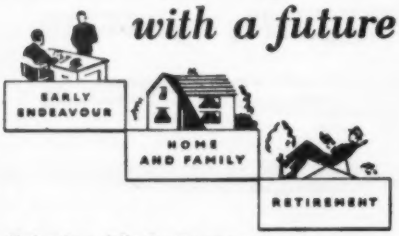


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**ACADEMIC AND EDUCATIONAL SECTION** *Page* 49

**ANÆSTHETICS**
Connaught, E.17. Sr. H.O. .. .. 51
Eastman Dental Hosp. & Inst. of Dental Surgery, W.C.1. Reg. .. 51
Metropolitan, E.8. Sr. H.O... .. 52
St. Nicholas, S.E.18. Sr. H.O. .. 53
St. Olave's, S.E.16. Sr. H.O... .. 53
West Ham Group H.M.C., E.15. Sr. H.O.'s .. .. .. 53
Ashton, Hyde & Glossop H.M.C. Jr. H.M.O. .. .. .. .. 53
Barrow & Furness H.M.C. Jr. H.M.O. 53
Birmingham. Dudley Road. Sr. H.O.'s .. .. .. .. 54
Birmingham R.H.B. Locum Reg. .. 54
Birmingham United Hosps. Sr. H.O. 54
Brighton. Royal Sussex County & Gen. Hosps. Sr. H.O.'s .. .. 54
Chelmsford Hosps. Sr. H.O. .. 56
Croydon Group H.M.C. Regs. .. 56
East Kilbride, Lanarkshire. Hairmyres. Sr. H.O. .. .. .. 56
Glasgow Royal Infy. Sr. H.O. .. 56
Leeds R.H.B. Reg. .. .. .. .. 57
Manchester R.H.B. P.-t. Cons. .. 50
Manchester R.H.B. Reg. .. .. 58
Mid-Kent H.M.C. Sr. H.O... .. 58
North West Met. R.H.B. P.-t. Cons... 49
Oldham & Dist. H.M.C. Sr. H.O. .. 59
Plymouth. South Devon & East Cornwall. Sr. H.O.'s .. .. 59
Reading. Royal Berks. Sr. H.O. .. 59
Salford Royal. Sr. H.O. & Locum .. 60
South East Met. R.H.B. Reg. .. 60
Taplow. Canadian Red Cross Mem. Sr. H.O. .. .. .. .. 60
Warrington Infy. Sr. H.O... .. 61
Welsh R.H.B. Reg. .. .. .. .. 61
Wolverhampton Group. Sr. H.O. .. 61
Belfast H.M.C. Sr. H.O.'s .. .. 61
New Zealand. Otago Hosp. Board. Jr. Specialist.. .. .. .. 51

**BACTERIOLOGY**
Newcastle United Hosps. Sr. H.O. .. 58

**CASUALTY**
Connaught, E.17. Sr. H.O. .. .. 51
Metropolitan, E.8. Sr. H.O... .. 52
North Middlesex, N.18. Sr. H.O. .. 52
Birmingham. Dudley Road. Sr. H.O. 54
Birmingham. Selly Oak. Sr. H.O... 54
Blackburn Royal Infy. Jr. H.M.O. or Sr. H.O. .. .. .. .. 55
Cheltenham Gen. & Eye. Jr. H.M.O. 56
Croydon Gen. Reg. .. .. .. .. 56
East Anglian R.H.B. Reg. .. .. 56
Halifax. Royal Infy. Sr. H.O. .. 56
Harrogate & Dist. Gen. Sr. H.O. .. 57
Hertford County. Sr. H.O. .. .. 57
Lancaster. Royal Lancaster Infy. Sr. H.O. .. .. .. .. .. 57
Maidenhead. H.O. .. .. .. .. 58
Nottingham Gen. Reg. .. .. .. 59
Rhyl. Royal Alexandra. Sr. H.O. .. 59
Salisbury Gen. Sr. H.O. .. .. 60
Swansea. Jr. H.M.O... .. .. .. 59
Warrington Infy. Jr. H.M.O. or H.O. or Sr. H.O. .. .. .. .. 61
Winchester. Royal Hants County. Sr. H.O. .... .. .. .. 61

**CHEST AND TUBERCULOSIS**
London Chest, E.2. H.O.'s .. .. 51
Plaistow, E.13. H.O... .. .. .. 52
Birmingham R.H.B. Sr. Reg. .. 54
Bovey Tracey. Hawkmoor Chest. Jr. H.M.O. .. .. .. .. 55
Godalming. King George V Hosp. for Diseases of the Chest. Sr. H.O. .. 56
Leeds R.H.B. Reg. .. .. .. .. 57
Market Drayton. Cheshire Joint San. Jr. H.M.O. or Sr. H.O. .. .. 58
Scotland. South-Eastern R.H.B. Sr. H.M.O. .. .. .. .. .. 50
Sheffield R.H.B. Sr. H.M.O. .. 50

**DERMATOLOGY**
Glasgow. Stobhill Gen. Pre-reg. H.O. 56
Manchester & Salford Hosp. for Skin Diseases. Sr. H.O. .. .. .. 57
Scotland. Eastern R.H.B. Reg. .. 59

**EAR, NOSE, AND THROAT**
Royal National T.N. & E., W. Reg. or Sr. H.O. .. .. .. .. 53
Birmingham & Midland Ear & Throat. Sr. H.O. or H.O. .. .. .. 54
Birmingham R.H.B. P.-t. Cons. .. 49
Guildford. Royal Surrey County. Sr. H.O. .. .. .. .. 56
Ipswich & East Suffolk. H.O. .. 57
Liverpool United Hosps. Reg. .. 57
Portsmouth Group H.M.C. Reg. .. 59
South East Met. R.H.B. Reg. .. 60

**GERIATRICS**
Brighton Gen. H.O. .. .. .. .. 54
Cardiff. St. David's. Sr. H.O. .. 55
Glasgow. Stobhill Gen. Pre-reg. H.O. 56
Manchester R.H.B. Cons. .. .. 50
Sheffield R.H.B. P.-t. Sr. H.M.O... 50

**HÆMATOLOGY**
North London Blood Transfusion Centre. Jr. H.M.O... .. .. 52

**INFECTIOUS DISEASES**
Bristol. Ham Green. Jr. H.M.O... 55
North East Met. R.H.B. Reg. .. 52
Nottingham. Heathfield. Locum Jr. H.M.O. .. .. .. .. .. 59

**LARYNGOLOGY AND OTOLOGY**
North West Met. R.H.B. P.-t. Cons. 49

**MEDICINE**
Central Middlesex, N.W.10. Sr. H.O. 51
Hosp. of St. John & St. Elizabeth, N.W.8. H.O. .. .. .. .. 51
Lambeth, S.E.11. H.O. .. .. .. 51
Metropolitan, E.8. Pre-reg. H.O.'s.. 52
National Temperance, N.W.1. Pre-reg. H.O. .. .. .. .. .. 52
North East Met. R.H.B. Reg. .. 52
North West Met. R.H.B. Cons. .. 49
Royal Free Hosp. Group. Locum Reg. 52
Royal Free Hosp. Group. Jr. H.M.O. 52
Royal London Homœopathic, W.C.1. H.O. .. .. .. .. .. .. 52
St. Mary's, W.2. P.-t. Med. O.-P. Asst. (G.P.) .. .. .. .. 53
Ashton, Hyde, & Glossop H.M.C. Sr. H.O. or Reg. .. .. .. .. 53
Aylesbury. Stoke Mandeville. H.O. 53
Barnstaple. North Devon Infy. Pre-reg. H.O. .. .. .. .. .. 53
Barrow-in-Furness. North Lonsdale. Sr. H.O. .. .. .. .. .. 53
Birmingham. Little Bromwich Gen. H.O. .. .. .. .. .. .. 54
Birmingham R.H.B. Reg. .. .. 54
Birmingham. Selly Oak. H.O.'s .. 64


*(continued overleaf)*

Birmingham. St. Chad's. H.O. .. 54
Birmingham United Hosps. Reg. or Sr. H.O. .. .. .. .. 54
Bishop Auckland. Gen. H.O. .. 55
Bournemouth. Christchurch. Reg. 55
Bromsgrove Gen. Pre-reg. H.O. .. 55
Bury & Rossendale H.M.C. Sr. H.O. .. 54
Cardiff. St. David's. Sr. H.O. .. 55
Carshalton. St. Helier. Pre-reg. H.O.'s .. .. .. .. 55
Chelmsford. St. John's. H.O. .. 56
Cheltenham Gen. Pre-reg. H.O .. 55
Edgware Gen. H.O. .. .. .. 56
Epsom Dist. Pre-reg. H.O. .. .. 56
Grantham & Kesteven Gen. Sr. H.O. or Pre-reg. H.O. .. .. .. 56
Grimsby H.M.C. H.O.'s or Sr. H.O.'s 57
Hastings. St. Helen's. Pre-reg. H.O. 57
Haverfordwest. Pembroke County War Mem. H.O. .. .. .. 57
Huddersfield Royal Infy. H.O. .. 57
Leeds R.H.B. Reg. .. .. .. 57
Manchester R.H.B. Reg. .. .. 58
Manchester. West Manchester H.M.C. Pre-reg. H.O. .. .. .. 58
Newton Abbot. Locum Sr. H.O. .. 59
Nottingham Gen. Pre-reg. H.O.'s .. 58
Nottingham. Highbury. Sr. H.O. .. 59
Poole Gen. Reg. & Pre-reg. H.O. .. 59
Portsmouth Group H.M.C. Pre-reg. H.O. .. .. .. .. .. 59
Sheffield. City Gen. Pre-reg. H.O. .. 60
Shrewsbury. Royal Salop Infy./Copthorne. Pre-reg. H.O. .. .. 60
South East Northumberland H.M.C. Pre-reg. H.O.'s .. .. .. 60
South West Met. R.H.B. Sr. H.M.O. 50
Stockport Infy. H.O. or Sr. H.O. .. 60
Swindon & Dist. H.M.C. H.O. .. 60
Wolverhampton Group. Pre-reg H.O.'s .. .. .. .. 61
Australia. Royal South Sydney. Med. Supt. .. .. .. .. .. 51
Channel Islands. Jersey. Gen. M.O. 61
New Zealand. Taumarunui Hosp. Board. Phys. .. .. .. 51


**NEUROLOGY**


National Hosps. for Nervous Diseases. Sr. Reg. .. .. .. .. 52


**NEUROSURGERY**


National Hosps. for Nervous Diseases. Sr. H.O. or Reg. .. .. .. 52
North East Met. R.H.B. Reg. .. 52


**OBSTETRICS AND GYNÆCOLOGY**


Hosp. of St. John & St. Elizabeth. N.W.8. H.O. .. .. .. .. 51
King Edward Mem., W. H.O. .. 51
St. George's, S.W.1. Sr. Reg. .. 53
Ashton, Hyde & Glossop H.M.C. H.O. 53
Barrow & Furness H.M.C. Locum Cons. or Sr. H.M.O. .. .. 49
Bebington. Clatterbridge. Sr. H.O. .. 54
Birmingham. Lordswood Maternity. H.O. .. .. .. .. .. 54
Birmingham R.H.B. Reg. .. .. 54
Birmingham. Selly Oak. H.O.'s .. 54
Birmingham. Sorrento Maternity. H.O. .. .. .. .. .. 54
Birmingham United Hosps. H.O. .. 54
Bournemouth. Royal Victoria. H.O. 55
Canterbury. Kent & Canterbury. H.O. .. .. .. .. .. 55
Cuckfield, Sussex. Pre-reg. H.O. .. 55
Epsom Dist. Sr. H.O. .. .. .. 56
Manchester. West Manchester H.M.C. Pre-reg. H.O. .. .. .. 58
Morpeth. Mona Taylor Maternity. Sr. H.O. .. .. .. .. .. 58
North East Met. R.H.B. Reg. .. 52
North West Met. R.H.B. Reg. .. 58
Nottingham City. Sr. H.O. or H.O. 59
Nottingham. Highbury. Sr. H.O. .. 59
Portsmouth Group H.M.C. Sr. H.O. 59


**OPHTHALMOLOGY**


Birmingham & Midland Eye. P.-t. Clin. Asst. .. .. .. .. 54
Doncaster Royal Infy. Sr. H.O. .. 56
Scotland. Western R.H.B. P.-t. Cons. 50


**ORTHOPÆDICS**


Middlesex, W.1. Sr. Reg. .. .. 52
Alton. Lord Mayor Treloar Orthopædic. Sr. H.O. .. .. .. 53
Beverley. Westwood. H.O. .. .. 53
Birmingham R.H.B. Regs. .. .. 54
Brighton Gen. H.O. .. .. .. 54
Carmarthen. West Wales Gen. Sr. H.O. .. .. .. .. .. 55
Croydon. Mayday. Sr. H.O. .. .. 56
Ipswich & East Suffolk. H.O. .. 57
Lancaster. Royal Lancaster Infy. Sr. H.O. .. .. .. .. .. 57
Leeds R.H.B. Reg. .. .. .. 57
Paisley. Royal Alexandra Infy. Jr. H.M.O. .. .. .. .. 59
Portsmouth Group H.M.C. Pre-reg. H.O. .. .. .. .. .. 59
Salisbury Gen. Sr. H.O. or H.O. .. 59
Sheffield. City Gen. Pre-reg. H.O. .. 60
Shrewsbury. Royal Salop Infy. Sr. H.O. .. .. .. .. .. 60
South East Met. R.H.B. Regs. .. 53


**PÆDIATRICS**


North Middlesex, N.18. Sr. H.O. & Locum .. .. .. .. 52
Queen Charlotte's & Chelsea Hosps. Sr. H.O. .. .. .. .. 52
Queen Elizabeth Hosp. for Child. H.O.'s .. .. .. .. 52
Birmingham. Selly Oak. H.O. .. 54
Birmingham United Hosps. Sr. H.O. 54
Manchester. Duchess of York Hosp. for Babies. Sr. H.O. & H.O. .. 58
Manchester R.H.B. & United Hosps. Sr. Reg. .. .. .. .. 58
Manchester. Royal Manchester Child's. H.O.'s .. .. .. .. 58
Manchester. West Manchester H.M.C. Sr. H.O. .. .. .. .. 58
Portsmouth Group H.M.C. Pre-reg. H.O. .. .. .. .. .. 59
Salisbury Gen. H.O... .. .. .. 60
Sheffield. City Gen. Pre-reg. H.O. .. 60
Stockport. Stepping Hill. Sr. H.O... 60
Windsor. King Edward VII. H.O. .. 61
Wolverhampton Group. Pre-reg. H.O. & Locum H.O. .. .. 61
Dublin. National Child's. H.O. .. 61


**PATHOLOGY**


North West Met. R.H.B. Cons. .. 49
Royal Free Hosp. Group. H.O. .. 52
St. James', S.W.12. Locum Sr. Reg. 52
Beverley. Westwood. Sr. H.O. .. 54
Manchester R.H.B. Sr. H.M.O. .. 50
Manchester. Withington. Sr. H.O... 58
Manchester. Wythenshawe. Sr. H.O. 58
North East Met. R.H.B. Sr. H.M.O. 49
Sheffield. City Gen. Sr. H.O. .. 60
Shrewsbury. Royal Salop Infy./Copthorne. Sr. H.O. .. .. .. 60
Winchester Group H.M.C. Reg. .. 61
Winchester. Royal Hants County. Sr. H.O. .. .. .. .. .. 61
Canada. Provincial Dept. of Health. Gen. Hosp., St. John's. Asst. Path. 50
New Zealand. Public Hosp. Timaru. Path. .. .. .. .. .. 50


**PHYSICAL MEDICINE**


South West Met. R.H.B. P.-t. Cons. 50


**PSYCHIATRY**


North West Met. R.H.B. Cons. & Sr. H.M.O. .. .. .. .. 49
St. Clement's, E.3. Sr. H.O. .. .. 53
Bexley, Kent. Sr. H.O. .. .. 53
Birmingham R.H.B. Reg. .. .. 54
Blackburn. Brockhall Hosp. for Mental Defectives. Jr. H.M.O. .. 55
Bristol Mental H.M.C. Sr. H.O. .. 55
Coulsdon, Surrey. Cane Hill. Reg. .. 55
Durham Univ. & Sheffield R.H.B. Regs. .. .. .. .. .. 56
Glasgow North-Eastern Mental Hosps. H.O.M. Sr. H.O. .. .. .. 56
Leeds R.H.B. Regs. .. .. .. 57
Lincoln Lawn. Jr. H.M.O. or Locum 57
Newcastle R.H.B. Sr. H.M.O. & Locum Sr. H.M.O. .. .. .. 50
North East Met. R.H.B. Regs. .. 52
North East Met. R.H.B. Sr. H.M.O.'s 49
Nottingham. Saxondale. Reg. or Jr. H.M.O. .. .. .. .. 59
Sheffield R.H.B. Cons. & Sr. H.M.O. 50
Sheffield R.H.B. Sr. Reg. .. .. 60
Wells, Som. Mendip. Jr. H.M.O. .. 61
West Malling, Kent. Leybourne Grange Colony for Mental Defectives. Jr. H.M.O. .. .. .. 61
Wigan & Leigh H.M.C. Reg. .. 61
Willerby, E. Yorks. De la Pole. Jr. H.M.O. .. .. .. .. 61


**RADIOLOGY**


Guy's, S.E.1. P.-t. Cons. .. .. 49
Chichester Group of Hosps. Locum Cons. .. .. .. .. .. 49
Liverpool United Hosps. Reg. .. 57
Newcastle United Hosps. Reg. & Sr. H.O. .. .. .. .. 58
North East Met. R.H.B. Cons. .. 49
Sheffield R.H.B. Sr. H.M.O... .. 50
Sheffield United Hosps. Reg... .. 60
New Zealand. Otago Hosp. Board. Jr. or Sr. Specialist .. .. .. 50
Western Australia. Royal Perth. Sr. Radiologist & Radiologists.. .. 51


**RADIOTHERAPY**


Manchester R.H.B. Sr. H.M.O. .. 50


**RHEUMATOLOGY**


Sheffield United Hosps./R.H.B. Reg. 60
Taplow. Canadian Red Cross Mem. H.O. .. .. .. .. .. 61


**SURGERY**


Central Middlesex, N.W.10. H.O... 51
Colindale, N.W.9. Sr. H.O... .. 51
German, E.8. Pre-reg. H.O... .. 51
Highlands Gen., N.21. H.O. .. .. 51
Lambeth, S.E.11. Reg. & H.O. .. 51
Metropolitan, E.8. Pre-reg. H.O.'s.. 52
National Temperance, N.W.1. Pre-reg. H.O.'s .. .. .. .. 52
Prince of Wales's Gen., N.15. H.O... 52
Royal Marsden, S.W.3. Reg. .. 53
St. Leonard's, N.1. H.O. .. .. 53
Wimbledon, S.W.20. H.O. .. .. 53
Aylesbury. Tindal Gen. Sr. H.O. .. 53
Barnstaple. North Devon Infy. Pre-reg. H.O. .. .. .. .. 53
Bedford Gen. H.O. .. .. .. 53
Birmingham. Dudley Road. H.O.'s 54
Birmingham R.H.B. Reg. .. .. 54
Birmingham. Selly Oak. H.O.'s .. 54
Birmingham. St. Chad's. H.O. .. 54
Bishop Auckland. Gen. H.O. .. 55
Bristol. Cossham/Frenchay H.M.C. Sr. H.O. .. .. .. .. 55
Bromsgrove Gen. H.O. .. .. .. 55
Burton-on-Trent. Gen. H.O... .. 55
Carmarthen. West Wales Gen. H.O. 55
Cheltenham Gen. H.O. .. .. .. 55
Chester-le-Street. Gen. Sr. H.O. & H.O. .. .. .. .. .. 55
Cuckfield, Sussex. Pre-reg. H.O. .. 55
Derby. Derbyshire Royal Infy. Pre-reg. H.O. or Sr. H.O. .. .. 56
Epsom Dist. Pre-reg. H.O.'s .. .. 56
Exeter. Royal Devon & Exeter. Sr. H.O. .. .. .. .. .. 56
Guildford. Royal Surrey County. H.O. .. .. .. .. .. 56
Haverfordwest. Pembroke County War Mem. H.O. .. .. .. 57
Hereford County. H.O. .. .. 57
Hounslow. H.O. .. .. .. .. 57
Huddersfield Royal Infy. H.O.'s .. 57
Huntingdon County. H.O. .. .. 57
Ilford. King George. Pre-reg. H.O.'s 57
Ipswich & East Suffolk. Pre-reg. H.O.'s .. .. .. .. .. 57
Kidderminster & Dist. Gen. Pre-reg. H.O. .. .. .. .. .. 57
Maidenhead. H.O. .. .. .. .. 58
Maidstone. West Kent Gen. Pre-reg. H.O. .. .. .. .. .. 58
Manchester. Christie Hosp. & Holt Radium Inst. Sr. H.O. .. .. 57
Manchester. Royal Manchester Child's. H.O. .. .. .. .. 58
Manchester Victoria Mem. Jewish. Sr. H.O. .. .. .. .. .. 57
Newton Abbot. Sr. H.O. .. .. 59
North East Met. R.H.B. Reg. .. 52
Nottingham Gen. H.O.'s .. .. 58
Plymouth. South Devon & East Cornwall. Sr. H.O. & Pre-reg. H.O.'s 59
Pontypridd. East Glamorgan. Sr. H.O. .. .. .. .. .. 59
Southampton Gen. H.O.'s .. .. 60
South East Northumberland H.M.C. Pre-reg. H.O.'s .. .. .. 60
Stafford. Staffordshire Gen. Infy. Pre-reg. H.O. .. .. .. 60
Stoke-on-Trent. City Gen. Pre-reg. H.O. .. .. .. .. .. 60
Swindon & Dist. H.M.C. H.O. .. 60
Torquay. Torbay. H.O. .. .. 60
Winchester Group H.M.C. Reg. .. 61
Winchester. Royal Hants County. H.O. .. .. .. .. .. 61
Wolverhampton Group. Pre-reg. H.O.'s & Locum H.O. .. .. 61
Worcester Royal Infy. H.O. .. 61
Wrexham. Maelor Gen. Pre-reg. H.O. 61
Belfast H.M.C. Sr. H.O.'s .. .. 61
Dublin. National Child's. H.O. .. 61


**THORACIC SURGERY**


London Chest. E.2. Sr. H.O. or Reg. 52
North Middlesex, N.18. Locum Reg. 52
South East Regional Thoracic Surgery Unit, S.E.18. Sr. H.O. .. .. 53
Bromsgrove. Hill Top. Pre-reg. H.O. 55



**PUBLIC APPOINTMENTS** 61
**GENERAL PRACTICE** 62
**NON-MEDICAL** 62
**MISCELLANEOUS** 62


*The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.*

## Academic and Educational

### THE UNIVERSITY OF LEEDS

DIPLOMA IN PSYCHOLOGICAL MEDICINE

A COURSE for the Diploma in Psychological Medicine will commence in OCTOBER, 1956, if sufficient entries are received. Instruction will be part-time and will occupy 3 half-days a week during 8 academic terms (2½ years).

Further particulars may be obtained from the Sub-Dean, School of Medicine, Leeds, 2, to whom application for admission to the course should be sent as soon as possible.

### L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 9th July, 13th August, 8th October, 1956. MEDICINE, PATHOLOGY, 16th July, 20th August, 15th October, 1956. MIDWIFERY, 17th July, 21st August, 16th October, 1956. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries Hall, Black Friars-lane, London, E.C.4.

**MEDICAL RESEARCH COUNCIL wish to appoint** VIROLOGIST for work at West African Council for Medical Research Laboratories, Yaba, Lagos, Nigeria. Appointment for 1 tour of 18 months, in first instance, but further possibilities. Applications will be considered from medically qualified graduates with good bacteriological experience; preliminary training in virus techniques will be given at the National Institute for Medical Research, Mill Hill, N.W.7.

Starting salary according to qualifications and experience, at point in range £1150–£1250 p.a. Foreign service allowance additional, at rate of £490, £760 or £1125 p.a. according to personal circumstances. Superannuation provision.

Free passages to and from U.K. for successful applicant and family; kit allowances and furnished accommodation provided; educational facilities available for young children.

Applications, giving full details of career and names of 2 professional referees, to the Director, National Institute for Medical Research, Mill Hill, N.W.7.

**POSTGRADUATE MEDICAL SCHOOL OF LONDON,** Ducane-road, London, W.12. REGISTRAR (morbid anatomy) required 1st October. Duties include written work, demonstrations to the D.C.P. course and research. National Health Service terms.

Applications, with the names of 2 referees, to the Dean, by 22nd June, 1956.

**THE WELSH NATIONAL SCHOOL OF MEDICINE.** (UNIVERSITY OF WALES.) Applications are invited for the post of SENIOR LECTURER in the Surgical Unit at the Cardiff Royal Infirmary. The person appointed will be required to assist in the work of the Professorial Department, as directed by the Professor, and in the care of patients. The Unit has 46 Beds, laboratory accommodation, a staff library, museum, &c. The post is full-time with salary on the scale £1750–£100–£2400 p.a. Schemes of superannuation and family allowances apply to the appointment.

Further particulars may be obtained from the undersigned, by whom applications should be received within 3 weeks of the appearance of this advertisement.

34, Newport-road, Cardiff. F. DODSWORTH, Secretary.

**UNIVERSITY OF LONDON KING'S COLLEGE offers a** TUTORIAL STUDENTSHIP of £375 a year, with free tuition, in physiology, tenable from 1st October, 1956, and renewable annually. Applicants must be graduates, or about to graduate, and will be required to read for a higher degree and to give a limited amount of assistance by demonstrating.

Particulars and forms from the Registrar, King's College, Strand, W.C.2, whom completed applications should reach not later than 15th June.

**UNIVERSITY OF EDINBURGH. Department of Bacteriology.** Applications are invited from medical graduates for the post of LECTURER in the Department of Bacteriology. The successful candidate will be expected to act as an Assistant Bacteriologist in the Royal Infirmary, and to undertake certain teaching duties. Salary scale £700–£100–£1100: Bar; £1200–£100–£1600 p.a. with placement according to qualifications and experience, and with superannuation benefit and family allowance where applicable.

Further particulars may be obtained from the undersigned, with whom applications (6 copies), together with the names of 2 referees, should be lodged not later than 9th July, 1956.

JOHN MACPHERSON, Assistant Secretary to the University.

**THE UNIVERSITY OF ALBERTA invites applications** for the position of PROFESSOR AND HEAD of the Department of Psychiatry, at a salary of $10,000 per year, plus pension plan. Earnings from consultation allowed up to an additional $10,000 per year. Appointee will also be Director of Psychiatric Service at University of Alberta Hospital. Duties to include teaching of medical students, direction of University department of psychiatry and psychiatric service at hospital, and clinical consultation. Preference given to man with research interests. F.R.C.P.(C.), or its equivalent, is eventual requirement for position.

Applications should include a recent photograph, a curriculum vitae, and the names of 3 referees, and should be sent to the Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

**THE UNIVERSITY OF ALBERTA invites applications** for the position of PROFESSOR AND HEAD of the Department of Pediatrics, at a salary of $10,000 per year, plus pension plan. Earnings from consultation allowed up to an additional $10,000 per year. Appointee will also be Director of Pediatric Service at University of Alberta Hospital. Duties to include teaching of medical students, direction of University department of pediatrics and pediatric service at hospital, and clinical consultation. Preference given to man with research interests. F.R.C.P.(C.), or its equivalent, is eventual requirement for position.

Applications should include a recent photograph, a curriculum vitae, and the names of 3 referees, and should be sent to the Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

## Hospital Services: Senior Appointments

**GUY'S HOSPITAL, S.E.1. The Board of Governors** invites applications for the appointment of CONSULTANT RADIOLOGIST, to work in the Dental Department. Attendance will be required on 3 sessions a week. Applicants must hold higher qualifications.

Applications (1 copy), together with the names of 3 referees, should be submitted to reach the Superintendent, Guy's Hospital, London, S.E.1, not later than 30th June, 1956. In accordance with Statutory Instrument No. 1259 of the National Health Service Regulations, canvassing members of the Board or Advisory Appointments Committee will lead to disqualification.

**NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.**

(1) CONSULTANT AURIST, 1 half-day a week, Audiology Unit, Heston School for the Deaf, Vicarage Farm-road, Heston. Unit may be visited by arrangement with the Area Medical Officer, 92, Bath-road, Hounslow.

Applications before 11th July, 1956.

(2) CONSULTANT PHYSICIAN (whole-time), to organise and develop a Department of Industrial Medicine based on Central Middlesex Hospital, Acton-lane, N.W.10. Extensive knowledge and wide experience of industrial medicine essential. Beds will be made available as needed and suitable social welfare and secretarial assistance provided. The post will involve teaching and facilities for research will be arranged.

Applications before 2nd July, 1956.

(3) CHILD PSYCHIATRIST (Senior Hospital Medical Officer grade) whole-time or 9 half-days a week, Berkshire Child Guidance Service. Service administered by Joint Committee of Berkshire County and Reading Education Authorities and Oxford and North West Metropolitan Regional Hospital Boards. Duties include clinic at Maidenhead, sessions in Reading Clinic and psychiatric care of children in hostels for maladjusted children in Maidenhead and Wokingham. Possibility of session for adult psychiatric outpatients at Royal Berkshire Hospital.

Applications before 13th July, 1956.

(4) CONSULTANTS in Psychotherapy, Tavistock Clinic, 2, Beaumont-street, London, W.1 (Adult Department). 1 post of 3 half-days and another of 2 half-days a week. Duties include training of Registrars in analytical psychotherapy and allied techniques. Experience in conducting personal analyses and in case supervision an advantage. Appointments to commence 1st September, 1956. Clinic may be visited by direct appointment with the Medical Director.

Applications before 16th July, 1956.

(5) CONSULTANT MORBID ANATOMIST (whole-time or maximum sessions), Central Middlesex Hospital, Acton-lane, N.W.10 (726 Beds).

Applications before 18th July, 1956.

(6) CONSULTANT ANÆSTHETIST (2 half-days a week), Mount Vernon Hospital, Northwood (551 Beds). Operating sessions in general surgery Monday and Wednesday afternoons.

Applications before 20th July, 1956.

(7) CONSULTANT ANÆSTHETIST (2 half-days a week), Harefield Hospital, Harefield, Middlesex (632 Beds, including a Thoracic Surgical Unit of 86 Beds). Operating sessions in thoracic surgery Friday mornings and afternoons.

Applications before 20th July, 1956.

(8) CONSULTANT ANÆSTHETIST (21 hours a week), Harefield Hospital, Harefield, Middlesex (632 Beds), Wednesday mornings and afternoons, Friday afternoons and alternate Tuesday afternoons; Uxbridge Cottage Hospital (27 Beds), Friday mornings; Queen Victoria Hospital, Hanwell (17 Beds), Tuesday mornings.

Applications before 23rd July, 1956.

Hospitals and Clinics may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

**BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE.** Locum Tenens Whole-time or maximum Part-time CONSULTANT in Obstetrics and Gynæcology required for period of 4–6 weeks, commencing as soon as possible, in the Barrow and Furness Group of hospitals. Remuneration £50 or 45 guineas per week for a Consultant or 31½ guineas per week for Medical Practitioners not graded as a Consultant.

Applications to Group Secretary, 105, Abbey-road, Barrow-in-Furness, immediately.

**BIRMINGHAM REGIONAL HOSPITAL BOARD. Mid-WORCESTERSHIRE GROUP.** Part-time CONSULTANT E.N.T. SURGEON (4 notional half-days weekly). Duties at Bromsgrove General Hospital (3 notional half-days) and Smallwood Hospital, Redditch (1 notional half-day). Higher qualification/wide experience essential.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 25th June, 1956.

**CHICHESTER GROUP OF HOSPITALS. Locum Con-**SULTANT RADIOLOGIST required, 3 weeks, September, 1956.

Apply Group Secretary, 174, Broyle-road, Chichester.

**NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.**

Full-time or maximum Part-time CONSULTANT RADIOLOGIST to Romford Group of hospitals, based on Oldchurch Hospital, Romford, Essex.

Full-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer grade) at Group Laboratory, General Hospital, Southend-on-Sea. Experience in all branches of pathology desirable.

Full-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) at Runwell Hospital, near Wickford, Essex. (2 posts,—1 resident, 1 non-resident.)

Applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, W.1, by Saturday, 23rd June.

**MANCHESTER REGIONAL HOSPITAL BOARD.**

(*a*) Whole-time (or maximum Part-time) CONSULTANT PHYSICIAN (geriatrics) to the Wigan and Leigh Hospital Centre (chronic sick beds totalling 320 mainly at Billinge Hospital, Wigan, and Atherleigh Hospital, Leigh). Good experience in general medicine, special interest and experience in the treatment and rehabilitation of the chronic sick and higher qualifications essential. Appointee required to undertake the domiciliary investigations of patients and establish close liaison with general practitioners and local health authorities. 18th June, 1956.

(*b*) Maximum Part-time CONSULTANT ANÆSTHETIST to the Bolton and District Hospital Centre (Bolton Royal Infirmary, 327 Beds; Bolton District General Hospital, 604 Beds, &c.). Wide experience and higher qualifications essential; appointee to live in area. 20th June, 1956.

(*c*) Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) to the Wigan and Leigh Hospital Centre (main laboratories at the Royal Albert Edward Infirmary, Wigan, and Leigh Infirmary). General experience essential, but special experience in bacteriology desirable. Successful candidate will work under general guidance of a Consultant. 19th June, 1956.

(*d*) Whole-time NON-RESIDENT ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer), Christie Hospital and Holt Radium Institute, Manchester. F.F.R. or other higher qualification desirable; appointee to live in or near Manchester. 20th June, 1956.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

**NEWCASTLE REGIONAL HOSPITAL BOARD.**

**Winterton Hospital, Sedgefield**

Locum Tenens PSYCHIATRIST (Senior Hospital Medical Officer), whole-time, for approximately 3 months.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, immediately.

**St. George's Hospital, Morpeth** (1256 Beds)

ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer), whole-time, resident. Candidates should normally hold a D.P.M. but applications will be considered from candidates with no previous practical experience in psychiatry who hold a higher qualification, have had wide experience in general medicine, including Senior Registrar posts, and intend to obtain a D.P.M. and specialise in psychiatry. Full particulars from Medical Superintendent.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

**SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD** requires Whole-time ASSISTANT PHYSICIAN (Senior Hospital Medical Officer grade) at Dorking General Hospital, Surrey. There is a visiting Consultant Physician, whole-time Assistant Physician, and Senior House Physician; the successful candidate will be required to undertake mainly geriatric work, under the general direction of the visiting Consultant, and will also be required to deputise for the Medical Superintendent in his absence. In addition he will supervise the tuberculosis beds under the Consultant Chest Physician. There are excellent opportunities for clinical research.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to the Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 30th June, 1956. Applicants may visit Hospital by local arrangement.

**SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD** requires Part-time CONSULTANT PHYSICIAN in Physical Medicine (3 half-days per week) for the Guildford (Surrey) Group of hospitals.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 30th June, 1956. Applicants may visit hospitals by local arrangement.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time CONSULTANT PSYCHIATRIST required at Pastures Hospital, Mickleover, near Derby. Modern house available.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 30th June.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Part-time MEDICAL OFFICER (based on Hillcrest Hospital, Leicester) for 6 notional half-days per week for the Leicester Geriatrics Service. Salary within Senior Hospital Medical Officer scale.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 30th June.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time SENIOR ASSISTANT PSYCHIATRIST required for Bracebridge Heath Hospital, Lincoln. Salary scale £1500–£50–£1950.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 30th June, 1956.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time ASSISTANT CHEST PHYSICIAN for the Chesterfield and North Derbyshire Area. Duties will include attendance at the 2 Chest Clinics and Walton Hospital (146 Beds) where there is an active Thoracic Surgical Unit in which both tuberculosis and non-tuberculosis work is undertaken. Salary scale £1500–£50–£1950.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, forms to be returned by 30th June, 1956.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time ASSISTANT RADIOLOGIST for Derbyshire Royal Infirmary to work under the direction of Consultant Radiologist-in-charge. Candidates should possess a Diploma in Radiology. Salary scale £1500–£50–£1950.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 30th June.

**SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD.** Applications invited for whole-time appointment of a SENIOR HOSPITAL MEDICAL OFFICER for duties with the Edinburgh Royal Victoria and Associated Hospitals. The post will be associated with the Professorial Unit of the Department of Tuberculosis and Diseases of the Respiratory System, Edinburgh University, and the holder will act as Deputy to the Professor in clinical matters. He will also be expected to assist with teaching and research.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 7th July, 1956.

**SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD.** Applications are invited for the appointment of CONSULTANT OPHTHALMOLOGIST in charge of wards at Glasgow Eye Infirmary, with duties elsewhere in the Region as may be required. The appointment will be part-time on the basis of 8 notional half-days per week. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

**CANADA. PROVINCIAL DEPARTMENT OF HEALTH.** GENERAL HOSPITAL, ST. JOHN'S, NEWFOUNDLAND, CANADA. Required, experienced ASSISTANT PATHOLOGIST for duty at the General Hospital, St. John's, Newfoundland, and the Public Health Laboratories of the Department of Health. Major experience must be in surgical pathology and morbid anatomy, but experience in clinical pathology such as biochemistry, hematology and bacteriology also desirable. The Hospital is an active 475 bed institution, and the Pathology Department undertakes surgical and autopsy pathology for all hospitals in Newfoundland. Last year over 6000 surgical specimens and 250 autopsies performed. The Pathology Department of the Hospital is approved for 1 years postgraduate training by the Royal College of Physicians and Surgeons of Canada and 3 resident interns in pathology are maintained. Salary $6500, plus $1500 allowance p.a. Transport to St. John's will be paid by the Department of Health on the basis of 1 years service.

Applications in writing, with copies of 3 recent testimonials, should be forwarded as soon as possible to—

Dr. E. WILSON, Superintendent, General Hospital.
St. John's, Newfoundland, Canada.

**NEW ZEALAND. PUBLIC HOSPITAL, Timaru, New ZEALAND.** Applications, addressed to the undersigned, are invited immediately for the full-time appointment of PATHOLOGIST. Salary is governed by the Hospital Employment Regulations which provide, according to qualifications and experience, a salary from £916 to £2271 (N. Z. currency). 28 days annual leave. Optional liberal superannuation scheme. A modern 5-roomed house, with all conveniences, is available at a moderate rental, for initial occupation and for a reasonable time thereafter. 2 qualified Bacteriologists and 4 trainees are also employed. Full details of duties obtainable from the Medical Superintendent.

The position is subject to the following special conditions:—

Provided the appointee signs a contract for two (2) years employment with the Board, travelling expenses will be paid:—

(*a*) Up to £120 for steamer fares actually incurred, including wife and dependent children.

(*b*) The cost of transporting excess baggage and light personal effects only, from the place of residence in the United Kingdom to the port of arrival in New Zealand, not exceeding £50 for a married man and £25 for a single appointee.

(*c*) Actual and reasonable travelling expenses incurred in travelling to the point of embarkation in the United Kingdom.

Applicants to state age, married or single, qualifications and experience and to enclose not more than 3 copies only of recent testimonials. Duties to commence 17th December, 1956.

H. G. NAYLOR, Secretary,
The South Canterbury Hospital Board.
P.O. Box 88, Timaru, New Zealand. Timaru, 23rd May, 1956.

**NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN.** Applications are invited for the position of DIAGNOSTIC RADIOLOGIST, Otago Hospital Board. Applicants must hold a Degree in Medicine of an approved University and possess a higher qualification in the specialty. The salary payable will be that of a Junior or Senior Specialist under the Hospital Employment Regulations, viz.: £1290–£1940 p.a., plus general wage increase of £81 7s. p.a. The commencing salary will be determined in accordance with the qualifications and experience of the appointee. The position is a full-time and non-resident one. Travelling expenses as set out in the Conditions of Appointment will be paid when a Contract of Service is signed. Conditions of appointment and application forms may be obtained from the Office of the High Commissioner for New Zealand, 415, Strand, London, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applications, stating age, qualifications and experience together with testimonials, health and radiological certificates, will be received by the undersigned until 10 A.M. on Monday, 20th August, 1956.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, New Zealand.

**NEW ZEALAND. THE OTAGO HOSPITAL BOARD.** UNIVERSITY OF OTAGO, NEW ZEALAND. Applications are invited for the position of JUNIOR SPECIALIST ANÆSTHETIST (Dunedin Hospital), ASSISTANT LECTURER in Anæsthetics (Otago Medical School), from those who hold a Degree in Medicine of an approved university. The position is full-time and private practice is not permitted. The position is designated as that of Junior Specialist under the Hospital Employment (Medical Officers) Regulations. Salary scale £1290–£1590, plus general wage increase, by annual increments of £50. Commencing salary according to qualifications and experience. Duties will include the practical teaching of anæsthetics to Medical and Dental Students. The position is non-resident. Travelling expenses as set out in the conditions of appointment will be paid when a Contract of Service is signed. Conditions of appointment and application forms may be obtained from the Office of the High Commissioner for New Zealand, 415, Strand, London, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applications, stating age, qualifications and experience, together with testimonials, health and radiological certificates, will be received by the undersigned until 10 A.M., Monday, 6th August, 1956.

W. A. WILLIAMSON, Secretary, Otago Hospita lBoard.
P.O. Box 946, Dunedin, New Zealand.

**NEW ZEALAND. TAUMARUNUI HOSPITAL BOARD.** Applications are invited from medical practitioners with qualifications registrable in New Zealand, for the position of Full-time PHYSICIAN to take full charge of medical patients admitted to the Taumarunui Public Hospital. Applicants should be eligible to qualify as a Junior Specialist under the Hospital Employment (Medical Officers) Regulations, 1952. A higher medical qualification is desirable. Salary scale £1290–£1590 plus cost-of-living bonus, the commencing salary in that scale to be determined by the Medical Officers Salaries Grading Committee. Full particulars of the duties of the position and the conditions of appointment are available on request, or from the office of the High Commissioner for New Zealand, Strand, London.

Applications, showing full particulars of qualifications, and experience, together with the names of 3 referees, should be forwarded to reach the Official Secretary, the Office of the High Commissioner for New Zealand, Strand, London, W.C.2, not later than 30th June. Envelopes should be marked "Physician, Taumarunui Hospital" in the top left-hand corner.

S. A. PHILIP, Secretary.

**AUSTRALIA. ROYAL SOUTH SYDNEY HOSPITAL,** Joynton-avenue, ZETLAND, SYDNEY, AUSTRALIA. Applications are invited for the position of MEDICAL SUPERINTENDENT of the above Hospital of 100 Beds and situated in an industrial area. Salary £A1505 4s.–£A2000 p.a., according to the number of years of experience. Accommodation available at Hospital for single man.

Applications, endorsed "Medical Superintendent," stating age, qualifications, experience and marital status, together with references to be forwarded to the undersigned not later than Saturday, 30th June, 1956.

R. T. WRIGHT, Secretary and Chief Executive Officer.

**WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL.**
SENIOR STAFF RADIOLOGIST.
2 STAFF RADIOLOGISTS.

Applications are invited for the above full-time posts in Diagnostic Radiology. Candidates must be fully qualified Radiologists and preference will be given to those with higher qualifications.

*Salary* :—
Senior Staff Radiologist : £A2980 p.a.
Staff Radiologist : Salary within the range of £A2290 p.a.–£A2460 p.a., according to qualifications and experience.

These rates are at present under review and the amended rates will be set out in the Memorandum of Particulars.

The Royal Perth Hospital is a designated Medical Undergraduate Teaching Hospital ; it has more than 600 Beds and is extending.

The Senior Staff Radiologist will work under the overall direction of the Director of Radiology who will be a senior member of the Honorary Staff. The Senior Staff Radiologist will be responsible for duties of full-time staff ; internal management of the department ; training of technicians ; arrangement of demonstrations and provision of radiological teaching material.

A memorandum of further particulars concerning these posts will be supplied on request.

Applications must include particulars of qualifications, experience, age, marital status, war service, if any, and the names of 2 referees, and should reach the undersigned on or before 31st August, 1956. JOSEPH GRIFFITH, Administrator.

## Hospital Services : Junior Appointments

**GERMAN HOSPITAL, London, E.8. (General—157 Beds.)** Applications are invited for the 6-month resident appointment, now vacant, of Pre-registration HOUSE SURGEON, and should be sent immediately to Group Secretary, Hackney Hospital, London, E.9, quoting GH/PHS.

**COLINDALE HOSPITAL, Colindale-avenue, London,** N.W.9. (300 Beds.) SENIOR HOUSE OFFICER (resident when on duty), required at above Hospital to assist in thoracic, orthopædic and genito-urinary surgery.

Apply, stating age, qualifications and experience, and giving the names and addresses of 2 referees, to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, by 16th June, 1956.

**CENTRAL MIDDLESEX HOSPITAL, Park Royal,** N.W.10. SENIOR HOUSE OFFICER in General Medicine required with duties mainly in Geriatric Department. Good facilities for higher examination. Insight into working of general practice. Whole-time appointment for 6 months in first instance. Post vacant beginning of July, 1956.

Applications, with copies of 2 testimonials, to Medical Director by 16th June, 1956.

**CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10.** RESIDENT HOUSE OFFICER required in General Surgical Department. Appointment for 6 months from 1st July, 1956. Pre-registration candidates will be considered.

Applications, with 2 testimonials, to Medical Director by 16th June, 1956.

**CONNAUGHT HOSPITAL, Walthamstow, E.17. (118** Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (graded Senior House Officer), vacant 4th July, 1956. Salary £745 p.a., less £150 p.a. for board, lodging, &c. Recognised for D.A. and F.F.A.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langtherne-road, E.11.

**CONNAUGHT HOSPITAL, Walthamstow, E.17. (118** Beds.) Applications are invited for the post of CASUALTY OFFICER AND DEPUTY RESIDENT SURGICAL OFFICER (graded as Senior House Officer). Recognised for F.R.C.S. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

**EASTMAN DENTAL HOSPITAL AND INSTITUTE OF** DENTAL SURGERY (UNIVERSITY OF LONDON), Gray's Inn-road, W.C.1. Applications are invited for the whole-time appointment of ANÆSTHETIST in the grade of Registrar, commencing 1st September, 1956. Remuneration and conditions of service in accordance with national scale for hospital medical staff.

Application forms are obtainable from the Director to whom they should be returned by 1st July, 1956.

**HIGHLANDS GENERAL HOSPITAL, Winchmore Hill,** London, N.21. HOUSE SURGEON, vacant 30th June, 1956. 50 surgical beds, new operating theatre, Outpatient and Casualty Departments. Preference given to applicants seeking pre-registration post under Medical Act, 1950.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

**HOSPITAL OF ST. JOHN AND ST. ELIZABETH,** 60, Grove End-road, London, N.W.8. Applications are invited from pre-registration or registered medical practitioners (Male) for the appointment of HOUSE PHYSICIAN, to become vacant on Monday, 16th July, 1956. Appointment will be for a period of 6 months. National Health Service salary.

Applications to reach the Secretary on or before Monday, 25th June, 1956, together with copies of 3 recent testimonials.

**HOSPITAL OF ST. JOHN AND ST. ELIZABETH,** 60, Grove End-road, London, N.W.8. Applications are invited from pre-registration or registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcological Departments, to become vacant on Friday, 22nd June, 1956. Appointment will be for a period of 6 months. National Health Service salary.

Applications to reach the Secretary on or before Monday, 18th June, 1956, together with copies of 3 recent testimonials.

**KING EDWARD MEMORIAL HOSPITAL, Ealing.** HOUSE OFFICER in Gynæcology with some obstetric duties at Perivale Maternity Hospital, Greenford (recognised as a surgical pre-registration post), vacant immediately. Preference given to persons seeking second pre-registration post under the Medical Act, 1950.

Applications, stating age, qualifications with copies of up to 3 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 19th June.

**LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications** are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE PHYSICIAN vacant on 1st August, 1956. The successful candidate will be required to carry out a fortnight's locum duty starting on 18th July, 1956.

Application forms from the Physician-Superintendent. Stamped addressed envelope should be enclosed.

**LAMBETH HOSPITAL, Brook-drive, S.E.11. South** WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of SURGICAL REGISTRAR. The appointment is normally for 2 years but is subject to review at the end of 1 year. It is recognised for the F.R.C.S. The duties comprise general surgery, orthopædics and E.N.T. The post is resident or non-resident, but if the latter the successful applicant will be required to sleep in on nights on duty. Canvassing will disqualify but candidates are not precluded from visiting the Hospital if they so desire.

Forms of application (enclosed stamped addressed envelope) from the Secretary of the Hospital, to whom all applications should be returned by 23rd June, 1956.

**LAMBETH HOSPITAL, Brook-drive, S.E.11. Appli**cations are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE SURGEON vacant on 23rd July, 1956. The successful candidate will be required to carry out a fortnight's locum duty starting on 9th July, 1956.

Application forms from Physician-Superintendent. Stamped addressed envelope should be enclosed.

**LONDON CHEST HOSPITAL. Hospitals for Diseases of** THE CHEST. 2 vacancies occur 1st August, 1956, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and post graded as House Officer. Duties include work in the Outpatient Department and refill clinic as well as in wards.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 20th June.

THOMAS BROWN, House Governor.
London Chest Hospital, E.2.

**LONDON CHEST HOSPITAL.** Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st August, 1956, for RESIDENT SURGICAL OFFICER. Appointment for 6 months, with prospect of renewal. Post graded as Senior House Officer or Registrar, according to qualifications and experience. Previous surgical experience necessary.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 25th June.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

**MIDDLESEX HOSPITAL, W.1.** Applications invited for post of SENIOR REGISTRAR to the Fracture and Orthopædic Department.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 30th June.

**METROPOLITAN HOSPITAL, Kingsland-road, London, E.8.** (General—146 Beds.) Applications are invited for the pre-registration posts of 2 HOUSE PHYSICIANS and 3 HOUSE SURGEONS, vacant 1st July, 1956.

Applications, stating age, nationality, qualifications or probable date of qualifications and experience, with copies of 3 recent testimonials, to the Hospital Secretary by 14th June, 1956.

**METROPOLITAN HOSPITAL, Kingsland-road, London, E.8.** (General—146 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (casualty), vacant 5th August, 1956. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with 3 testimonials, to the Hospital Secretary, by 14th June, 1956.

**METROPOLITAN HOSPITAL, Kingsland-road, London, E.8.** (General—146 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (anæsthetist), vacant 11th July, 1956.

Applications, stating age, nationality, qualifications and experience, together with 3 testimonials, to the Hospital Secretary by 14th June, 1956.

**NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.**

NEUROSURGICAL REGISTRAR (resident or non-resident), Oldchurch Hospital, Romford, Essex. Department offers excellent opportunities for training and experience.

REGISTRAR in Infectious Diseases and General Medicine (resident or non-resident), Rush Green Hospital, Romford, Essex. Regional Polio Unit (30 Beds) and approximately 10 medical beds. Excellent experience in wide variety of positive and negative pressure apparatus. Applicants may visit the Hospital by appointment (Tel. : Romford 7711).

SURGICAL REGISTRAR (resident), Victoria Hospital, Romford, Essex.

MEDICAL REGISTRAR (non-resident), West Ham Group of hospitals, London, E.13, and E.15.

REGISTRAR in Obstetrics and Gynæcology (resident), St. John's Hospital, Chelmsford, Essex. Recognised for D.Obst. R.C.O.G. and M.R.C.O.G.

PSYCHIATRIC REGISTRAR (resident or non-resident), Claybury Hospital, Woodford Bridge, Woodford Green, Essex. Recognised for D.P.M. Hospital has 2200 Beds (annual admissions 1400). All forms of modern treatment. Clinical conferences and seminars for D.P.M. held weekly. Facilities to attend lectures for D.P.M. in London. Duties include attendance at outpatient clinics of general hospitals.

PSYCHIATRIC REGISTRAR (non-resident if married), Runwell Hospital, near Wickford, Essex. Recognised for D.P.M.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 23rd June.

**NORTH MIDDLESEX HOSPITAL, Edmonton, N.18.** SENIOR HOUSE OFFICER (pædiatrics), resident, required for 1st August (LOCUM 17th–31st July). Previous experience desirable. Post recognised for D.C.H. Appointment for 6 months in the first instance with possible extension to 1 year.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 19th June.

**NORTH MIDDLESEX HOSPITAL, Edmonton, N.18.** CASUALTY OFFICER (Senior House Officer grade). 6 months appointment starting 25th June. Non-resident. Recognised for F.R.C.S. 3 Casualty Officers employed ; duties include service with the 3 main Surgical Units.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital.

**NORTH MIDDLESEX HOSPITAL, Edmonton, N.18.** Locum SURGICAL REGISTRAR for Thoracic Surgical Unit required 27th June for 3 weeks. Non-resident. Higher qualification in surgery desirable.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital.

**NATIONAL HOSPITALS FOR NERVOUS DISEASES.** Applications are invited from registered medical practitioners for the appointment of REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 23rd June, 1956.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.



**NATIONAL HOSPITALS FOR NERVOUS DISEASES.** HOUSE OFFICER (resident), medical or surgical, to the Neurosurgical Department at the Maida Vale Hospital for Nervous Diseases, London, W.9. Appointment in the first instance for 6 months, duties to commence on 31st July, 1956, or earlier by agreement. Grading as Senior House Officer or Registrar, according to experience.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Maida Vale Hospital for Nervous Diseases, W.9, not later than 13th June, 1956.

**NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1.** (158 Beds.) Applications are invited to fill the undermentioned posts commencing 20th July, 1956 :—

1 HOUSE PHYSICIAN (general), pre-registration post.

2 HOUSE SURGEONS (general), pre-registration posts.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to Hospital Secretary by 23rd June, 1956.

**NORTH LONDON BLOOD TRANSFUSION CENTRE,** Deansbrook-road, EDGWARE. JUNIOR HOSPITAL MEDICAL OFFICER for full-time duties with mobile teams at donor sessions. The appointment is for 3 years. Opportunity for training in clinical pathology exists.

Applications, giving age, qualifications, experience, and names of 2 referees, to Director not later than 23rd June, 1956.

**PLAISTOW HOSPITAL, Samson-street, London, E.13.** (185 Beds.) Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN (post-registration or pre-registration second post) for 6 months commencing 1st August, in the Chest Unit and Infectious Diseases Unit. Some experience in diseases of the chest desirable. The position offers good opportunities for experience in general medicine.

Applications, with copies of recent testimonials, to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 20th June.

**PRINCE OF WALES'S GENERAL HOSPITAL, N.15.** Applications are invited from qualified medical practitioners for appointment as RESIDENT JUNIOR HOUSE SURGEON (pre-registration, first or second post) for a period of 6 months, commencing 15th July, 1956.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 23rd June, 1956.

**QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.** QUEEN CHARLOTTE'S MATERNITY HOSPITAL. SENIOR HOUSE OFFICER in the Pædiatric Department. Resident post tenable for 6 months in the first instance from 1st July, 1956. Duties will include the supervision of the babies, research work under the visiting staff and charge of the follow-up clinics. Previous experience at a children's hospital is essential and possession of a higher qualification is desirable.

Applications to the House Governor by 18th June on forms obtainable from 339, Goldhawk-road, London, W.6.

**QUEEN ELIZABETH HOSPITAL FOR CHILDREN,** Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. 2 HOUSE OFFICERS. 1 of these appointments will be made for 2 periods of 6 months, commencing 1st August, 1956, and 1st March, 1957. First period as House Physician and second as House Surgeon and Casualty Officer. The other appointment will be for 6 months only as House Physician from 1st August, 1956.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with copies of not more than 3 testimonials, on or before 23rd June, 1956.

**ROYAL FREE HOSPITAL GROUP.** Applications are invited for the post of RESIDENT MEDICAL OFFICER to work at the North Western Branch of the Royal Free Hospital. Terms and conditions of service in accordance with the scale laid down by the Ministry of Health for Junior Hospital Medical Officers. Duties, which are for 6 months in the first instance, to commence 1st October, 1956.

Application forms may be obtained from the Secretary, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th June, 1956.

**ROYAL FREE HOSPITAL GROUP.** Applications are invited for the post of RESIDENT PATHOLOGIST (House Officer), vacant 1st September, 1956, from registered Men and Women practitioners. The post is for 6 months renewable for a further 6 months. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th June, 1956.

**ROYAL FREE HOSPITAL GROUP.** Applications are invited for the post of Locum MEDICAL REGISTRAR at the Royal Free Hospital, Lawn Road Branch. The appointment is for 6 months in the first instance duties to commence 1st August, 1956. Terms and conditions of service in accordance with the scale laid down by the Ministry of Health for Locum Registrars.

Formal applications, giving details of experience, &c., together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 23rd June, 1956.

**ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great** Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN now vacant. 6 months appointment. Salary on National Health Service scale. Candidates will be required to attend for interview.

Applications, stating age and full particulars, to Secretary.

**ST. JAMES' HOSPITAL, Balham, S.W.12. Locum Senior** REGISTRAR in Pathology required.

Applications giving full details and names of 2 referees, to the Group Secretary at above address immediately (42485).

**ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3.** Applications are invited for the post of SURGICAL REGISTRAR (full-time), to begin duty as soon as possible. Appointment for 1 year, eligible for reappointment

Forms of application are obtainable from the House Governor, to whom applications, together with names of 3 referees, should be sent, not later than 2nd July.

**ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL,** Gray's Inn-road, W.C.1, and Golden-square, W.1. In association with The Institute of Laryngology and Otology. Applications are invited for a post of REGISTRAR or alternatively SENIOR HOUSE OFFICER. A higher surgical qualification is required for the former grading and at least the primary F.R.C.S. for the latter. Considerable clinical experience in general surgery and in this specialty is required for either post. The appointment will be in accordance with the terms and conditions of service for the appropriate grade in the National Health Service.

Applications, giving full information and the names of 2 referees, should be sent to the House Governor by 30th June.

**SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited for 2 appointments as Whole-time REGISTRARS in Orthopædic Surgery to fill vacancies in the approved trainee establishment at the following groups of hospitals respectively :—

(1) Greenwich and Deptford.

(2) Medway and Gravesend.

The appointments will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 23rd June, 1956.

**SOUTH EAST REGIONAL THORACIC SURGERY UNIT** (50 Beds), BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant mid-July. Recognised for F.R.C.S. 6 months appointment and may then be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

**ST. CLEMENT'S HOSPITAL, London, E.3. Senior** HOUSE OFFICER required for Psychiatric Unit consisting of 24 observation beds and 36 beds for treatment of neuroses and early psychoses. Unit run in conjunction with the London and Claybury Hospitals. Post recognised for D.P.M. Vacant 25th June, 1956.

Apply to Group Secretary, Bow Group Hospital Management Committee, Committee Offices, 2A, Bow-road, E.3, with names of 3 referees.

**ST. MARY'S HOSPITAL, W.2. Applications are invited** from suitably qualified general medical practitioners for appointment as Part-time MEDICAL OUTPATIENT ASSISTANT for 1 session per week (Wednesday, P.M.) as from 1st August, 1956. Preference will be shown to applicants who are below the age of 40 years and in practice in the neighbourhood of St. Mary's Hospital. The appointment is for a first period of 12 months ; remuneration to be at the rate of £175 p.a.—i.e., graded General Practitioner.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 20th June, 1956.

**ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior** HOUSE OFFICER (anæsthetics), vacant 16th July. Recognised for F.F.A.R.C.S. and D.A. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

**ST. GEORGE'S HOSPITAL, S.W.1. Applications are** invited for the post of SENIOR REGISTRAR to the Departments of Obstetrics and Gynæcology. This is a joint appointment with St. George's Hospital, and the Southampton Group of hospitals, and the initial part of the appointment will be spent in Southampton. Candidates should possess a higher surgical qualification.

Applications, stating age, education, qualifications and experience, together with the names of 2 referees, should reach the undersigned not later than 30th June, 1956.

P. H. CONSTABLE, House Governor.

**ST. OLAVE'S HOSPITAL, Lower-road, Rotherhithe, S.E.16.** BERMONDSEY AND SOUTHWARK HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required at above Hospital. Salary £745 p.a., appointment initially for a period of 1 year from 1st July, 1956. Post recognised for D.A. and F.F.A.R.C.S.

Applications, with full details and names of 2 referees, to the Secretary at above address by 16th June, 1956.

**WEST HAM GROUP HOSPITAL MANAGEMENT COMMITTEE,** Stratford, London, E.15. ANÆSTHETISTS (resident : Senior House Officer grade) for 12 months commencing 16th July, 1956. 6 months at Queen Mary's Hospital for the East End and 6 months at East Ham Memorial Hospital. Combined posts recognised for F.F.A.R.C.S.

Applications, with names of 3 referees, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 23rd June, 1956.

**WIMBLEDON HOSPITAL, Thurstan-road, Copse Hill, S.W.20.** RESIDENT HOUSE SURGEON (not pre-registration). New post. Salary £525 p.a.

Applications, giving names of 2 referees, to Secretary at above address.

**ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1.** (Acute General—192 Beds.) Applications are invited from registered or provisionally registered practitioners for the post of HOUSE SURGEON for 6 months, commencing 1st July, 1956.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary as soon as possible.

**ALTON, HAMPSHIRE. LORD MAYOR TRELOAR ORTHOPÆDIC HOSPITAL.** (340 Beds.) Applications invited from registered medical practitioners (Male or Female) for Whole-time SENIOR HOUSE OFFICER, vacant from end of June, 1956. Post provides experience in non-pulmonary tuberculosis and general orthopædics and includes some plastic surgery work. Accommodation available. Visit to Hospital welcome.

Applications to Secretary within 2 weeks of this advertisement.

**ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE.** HOUSE OFFICER (obstetrics/gynæcology) required. Post recognised for D.Obst.R.C.O.G., vacant 28th June, 1956. Preference given to pre-registration candidates.

Applications, with copies of 2 testimonials, should be addressed to the Group Secretary, General Hospital, Ashton-under-Lyne, Lancashire.

**ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE.** JUNIOR HOSPITAL MEDICAL OFFICER (anæsthetics) required at Ashton-under-Lyne General Hospital, a busy, 600-Bedded general hospital. The duties are closely equivalent to those of a Registrar post, and offer very varied experience. Vacant 1st August, 1956. Subject to limited tenure of 4 years.

Applications, together with 2 references, to the Group Secretary, General Hospital, Ashton-under-Lyne, Lancs.

**ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD.** SENIOR HOUSE OFFICER (or REGISTRAR if suitably qualified) in General Medicine required. Vacant early June.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancashire.

**AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL.** RESIDENT HOUSE PHYSICIAN required for the Department of General Medicine. Recognised pre-registration post. Applications from registered practitioners will be considered. Post vacant 27th July, 1956.

Apply, with copies of 2 testimonials, to Administrative Officer.

**AYLESBURY. TINDAL GENERAL HOSPITAL. Resident** SURGICAL OFFICER (Senior House Officer, Male), vacant 11th August, 1956. Recognised for F.R.C.S. The Surgical Unit consists of 95 Beds and undertakes all general surgery for the area. The post offers excellent training in practical surgery, and is eminently suitable for an F.R.C.S. Final candidate. Some operating experience desirable but not essential. Salary £745 p.a., less £140 p.a. board and lodging, &c. A modern furnished bungalow is available if required.

Please apply, with 2 testimonials, to the Administrative Officer.

**BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.)** HOUSE SURGEON (pre-registration). Post vacant mid-July.

Applications to Group Secretary, North Devon Hospital Management Committee 19, Alexandra-road, Barnstaple.

**BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.)** HOUSE PHYSICIAN (pre-registration). Post vacant early July.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

**BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for a post of ANÆSTHETIST of Junior Hospital Medical Officer status, for services within the Barrow and Furness Hospital Group. Resident or non-resident. Post which is recognised for D.A., is tenable for 4 years, but may be renewed at end of period.

Applications to Group Secretary, 105, Abbey-road, Barrow-in-Furness.

**BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL.** Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical) at the North Lonsdale Hospital, Barrow-in-Furness. National conditions and salary scale.

Applications to the Group Secretary, Barrow and Furness Hospital Management Committee, 105, Abbey-road, Barrow-in-Furness.

**BEXLEY HOSPITAL, Dartford Heath, Bexley, Kent.** BEXLEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER at above Hospital. Salary £745 p.a., with deductions of £150 p.a. for board, lodging, &c., if resident. The Hospital (2300 Beds) deals with all types of psychiatric illness and experience in all modern physical, occupational and psychotherapeutic procedure is available. Opportunities will be available to assist at outpatient clinics.

Applications, with names and addresses of 3 referees, should be sent to the Physician-Superintendent, DR. L. C. COOK, M.D., D.P.M., within 14 days of the appearance of this advertisement.

**BEDFORD GENERAL HOSPITAL. (437 Beds.) House** SURGEON required (pre- or post-registration) ; recognised for F.R.C.S. The appointment offers exceptional opportunities for general experience in busy acute surgical units.

Applications, stating age, experience, nationality, copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

**BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL.** (229 Beds.) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post). Married accommodation available. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S. Vacant now.

Apply to Group Secretary.

**BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL.** ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory with attendance at Branch Laboratory, Driffield. Offers experience all branches of pathology. Salary £745.

Detailed applications to Group Secretary.

**BEBINGTON. CHESHIRE. CLATTERBRIDGE HOSPITAL.** (783 Beds.) SENIOR HOUSE OFFICER (obstetrics and gynæcology) required for 1st October, 1956.

Application forms obtainable from Hospital Secretary, to be returned as soon as possible.

**BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.** SENIOR HOUSE OFFICER (medical), Bury General Hospital (resident or non-resident). Post vacant 1st July, 1956.

Applications, giving names of 2 referees, should be made to—H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

**BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL,** Edmund-street, BIRMINGHAM, 3. SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-registration) required.

Apply to Group Secretary, Dudley Road Hospital, Birmingham, 18.

**BIRMINGHAM AND MIDLAND EYE HOSPITAL,** Church-street, BIRMINGHAM, 3. CLINICAL ASSISTANT required in Outpatient Department for 2 morning sessions a week (Mondays and Saturdays).

Detailed applications, with names of 2 referees, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

**BIRMINGHAM. DUDLEY ROAD HOSPITAL,** Birmingham, 18. (780 Beds.) SENIOR HOUSE OFFICER (Casualty Department) required, vacant immediately (40,000 attendances per year). Resident or non-resident. Recognised for F.R.C.S. Tenable for 6 or 12 months.

Detailed applications, with copies of 2 recent testimonials, to Group Secretary.

**BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL.** (780 Beds.) 2 HOUSE SURGEONS (recognised for pre-registration and F.R.C.S.), vacant 4th and 11th July, 1956. Each appointment is in unit of approximately 85 adult and children's general surgical beds under the control of 2 Consultant Surgeons.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary.

**BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL.** (780 Beds.) SENIOR HOUSE OFFICERS (anæsthetics) resident, required; 1 vacant immediately, 1 vacant 7th July. Recognised for D.A. and F.F.A.R.C.S. Extensive experience in anæsthetics not necessary. Duties include list and emergency work in general surgery, gynæcology, obstetrics, and E.N.T. at hospitals in Group.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary.

**BIRMINGHAM, 9. LITTLE BROMWICH GENERAL HOSPITAL.** HOUSE PHYSICIAN (Male/Female), vacant 12th July, 1956. Recognised as pre-registration appointment.

Apply Physician-Superintendent, with copies of 2 testimonials or names of referees.

**BIRMINGHAM. LORDSWOOD MATERNITY HOSPITAL, HARBORNE, BIRMINGHAM, 17.** RESIDENT OBSTETRIC HOUSE OFFICER. Commencing mid-July. 33 beds dealing with normal and abnormal midwifery. Recognised for D.Obst. R.C.O.G., and pre-registration post. Second Period Training School for Pupil Midwives.

Apply Obstetrician not later than 20th June, with copies of testimonials.

**BIRMINGHAM REGIONAL HOSPITAL BOARD.**

(1) **Birmingham Group 25 (Selly Oak), Oak Tree-lane, Selly Oak, Birmingham, 29**

Locum REGISTRAR (anæsthetics) for Birmingham Accident Hospital. Residential duties for period 2nd–15th July, 1956. £17 10s. per week, less £140 p.a. board and lodging.

(2) **Highcroft Hall Group, Highcroft Hall Hospital, Birmingham, 23**

REGISTRAR (psychiatry). All modern forms of treatment. Opportunities for outpatient clinic work and facilities provided for attending at Birmingham University if the successful candidate is studying for the D.P.M. Resident/non-resident.

(3) **Shrewsbury Group, Royal Salop Infirmary, Shrewsbury**

REGISTRAR (obstetrics and gynæcology) at Royal Salop Infirmary/Copthorne Hospital. Recognised for M.R.C.O.G. (Gynæcology). Duties include teaching and considerable clinical responsibility.

(4) **Stafford Group, 13, Foregate-street, Stafford**

REGISTRAR (surgery), resident. Duties mainly at Staffordshire General Infirmary (175 Beds) and Yarnfield Recovery Unit (32 Beds). Recognised for F.R.C.S. Experience surgery essential, higher qualification desirable.

(5) **Stoke-on-Trent Group, Princes-road, Stoke-on-Trent**

(*a*) REGISTRAR (orthopædics) at Hartshill Orthopædic Hospital (78 Beds). Resident. Experience specialty essential. Excellent library facilities.

(*b*) REGISTRAR (orthopædics) at Biddulph Grange Orthopædic Hospital (104 childrens beds). Resident. Considerable experience orthopædic and traumatic surgery available. Excellent library. Facilities for study. Possibility of married accommodation.

(6) **West Bromwich Group, Edward-street, West Bromwich**

REGISTRAR (general medicine) at Hallam Hospital (454 Beds). Resident. Experience specialty essential. Higher qualification desirable.

Application forms from Group Secretaries, to be returned before 18th June, 1956.

**BIRMINGHAM REGIONAL HOSPITAL BOARD.** CHESHIRE JOINT SANATORIUM, MARKET DRAYTON. (305 Beds.) Whole-time SENIOR REGISTRAR in Chest Diseases. Experience specialty essential. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals in accordance with the arrangements for the interchange of Registrars agreed between the 2 Boards.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 25th June, 1956.

**BIRMINGHAM, 29. SELLY OAK HOSPITAL.** (Equipped Beds 955.) HOUSE PHYSICIANS. HOUSE PHYSICIAN (pædiatrics); recognised for D.C.H., some duties at Moseley Hall Hospital for Children. HOUSE SURGEONS; recognised for F.R.C.S. HOUSE SURGEONS (gynæcology and obstetrics); recognised for M.R.C.O.G. All posts will be available on 14th July, and are recognised for Pre-registration Service. Tenable for 6 months.

Apply Medical Superintendent, giving qualifications, age and experience, and enclosing copies of 3 testimonials.

**BIRMINGHAM, 29. SELLY OAK HOSPITAL.** (955 equipped beds.) ASSISTANT CASUALTY OFFICER (Senior House Officer), resident/non-resident. Vacant 14th July, 1956. Recognised for F.R.C.S. Residential charge £167 p.a.

Applications, giving qualifications, experience and age, with copies of 3 recent testimonials, to Medical Superintendent.

**BIRMINGHAM, 13. SORRENTO MATERNITY HOSPITAL.** (106 Beds, including 24 premature baby cots.) OBSTETRIC HOUSE SURGEON. Recognised for the D.Obst.R.C.O.G. Hospital affiliated to Birmingham Medical School for training of students. Vacant 1st August, 1956.

Apply Obstetrician by 13th June, 1956.

**BIRMINGHAM. ST. CHAD'S HOSPITAL, Hagley-road, BIRMINGHAM, 16.** HOUSE SURGEON required from 7th July, 1956. Recognised for pre-registration.

Detailed applications, with recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

**BIRMINGHAM. ST. CHAD'S HOSPITAL, Hagley-road, BIRMINGHAM, 16.** HOUSE PHYSICIAN required from 7th July, 1956. Recognised for pre-registration.

Detailed applications, with recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

**BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS.** THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. RESIDENT GYNÆCOLOGICAL HOUSE SURGEON required for 7th July, 1956. Post recognised for M.R.C.O.G.

Application forms obtainable from the House Governor, to be returned immediately.

**BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS.** THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER in the grade of Senior House Officer, vacant 1st July, 1956, for 1 year. Previous experience in children's diseases preferable but not essential.

Forms of application may be obtained from the House Governor and should be returned to him immediately.

G. A. PHALP, Secretary to the Board of Governors.

**BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS.** QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (Registrar or Senior House Officer grade) for duty in the Medical Professorial Unit. For appointment to Registrar grade, candidates should have the M.R.C.P. (London). Opportunities exist for participation in cardio-respiratory research. The successful candidate may be required to be resident.

Forms of application may be obtained from, and should be returned not later than 23rd June, 1956, to, the Secretary, The United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

**BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS.** Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade). The post is tenable for 1 year, from 7th July, 1956. The appointment is recognised for the purpose of taking the F.F.A.R.C.S. examinations.

Application forms from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned to him as soon as possible.

**BRIGHTON GENERAL HOSPITAL. House Surgeon** (orthopædics). This post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton.

**BRIGHTON GENERAL HOSPITAL. House Physician** (geriatrics). This is a large Unit with an active rehabilitation section, which provides excellent clinical facilities. Vacant 18th July.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, 7.

**BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL;** BRIGHTON GENERAL HOSPITAL. 2 RESIDENT ANÆSTHETISTS (Senior House Officer grade) required for 1 year—6 months at each Hospital, by interchange of duties, with facilities for working in specialised hospitals within the Brighton and Lewes Group. Posts recognised for F.F.A.R.C.S. and D.A., and vacant early July and mid-August.

Applications, stating age, nationality and experience, naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

**BISHOP AUCKLAND. THE GENERAL HOSPITAL.** (350 Beds.) HOUSE SURGEON required. Recognised pre-registration post. Immediate vacancy.

Apply, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

**BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL.** (350 Beds.) HOUSE PHYSICIAN required. Registered practitioner or pre-registration post. Vacant end of June.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

**BLACKBURN (near). BROCKHALL HOSPITAL FOR MENTAL DEFECTIVES, LANGHO, near BLACKBURN, LANCS.** RESIDENT MEDICAL OFFICER required (Junior Hospital Medical Officer). 2159 Beds in modern and fully equipped colony, excellent facilities for gaining experience of mental deficiency practice. National Health Service conditions. Salary £775–£50–£1075. Accommodation (modern flat) available for single or married man or woman.

Applications, with usual particulars, to be sent to the Medical Superintendent. M. LAWRENCE,

Secretary of the Hospital Management Committee.

**BLACKBURN. ROYAL INFIRMARY. (262 general beds.)** JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required 25th June. Post recognised for F.R.C.S. Junior Hospital Medical Officer post can be for any period up to 4 years and a starting salary above the minimum of the scale may be approved on account of special experience or qualifications.

Apply to Secretary, Blackburn and District Hospital Management Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

**BOVEY TRACEY (near), SOUTH DEVON. HAWKMOOR CHEST HOSPITAL.** (214 Beds including Thoracic Surgery Unit of 43.) There will shortly be a vacancy for a JUNIOR HOSPITAL MEDICAL OFFICER. A house may be available for a married candidate.

Applications, stating age, qualifications and experience, with names of referees or copies of testimonials, to be addressed to the Medical Superintendent.

**BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE.** SENIOR HOUSE OFFICER (general surgery) required for duties at Cossham Memorial Hospital and at Frenchay Hospital, Bristol. Resident appointment, unmarried accommodation only.

Applications, naming 2 referees, to the Group Secretary, Frenchay Hospital, Bristol.

**BRISTOL MENTAL HOSPITAL MANAGEMENT COMMITTEE. BARROW AND FISHPONDS HOSPITAL.** Applications invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER. Experience in general medicine or neurology an advantage. The Group includes Modern Admission Units, Neurosis Centre, and Day Hospital, with Departments of Applied Psychology, Electro-encephalography, and Biochemical Research. The appointment offers opportunities for experience in many aspects of acute and chronic psychiatric illness.

Applications, giving details of experience, and names of 3 referees, should be sent to Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol.

**BRISTOL (near). HAM GREEN HOSPITAL, Pill, BRISTOL.** Applications are invited for the post of RESIDENT ASSISTANT PHYSICIAN in the Infectious Diseases Department (350 Beds) of this Hospital. The Hospital contains a major Poliomyelitis Unit, a tuberculous meningitis treatment centre, and offers wide experience in acute medicine. Salary and conditions on Junior Hospital Medical Officer scale. House available.

Applications, stating age, qualifications, &c., to the Group Secretary, Ham Green Hospital, Pill, near Bristol.

**BROMSGROVE. HILL TOP HOSPITAL. Regional THORACIC SURGICAL CENTRE.** HOUSE OFFICER (surgery) required at the above Hospital. Post vacant July, pre-registration.

Applications, with the names of 3 referees, to the Hospital Secretary.

**BROMSGROVE GENERAL HOSPITAL. (423 Beds.)** HOUSE OFFICER (medicine) required at the above Hospital. Pre-registration post. Vacant July, 1956.

Applications, with the names of 3 referees, to the Hospital Secretary.

**BROMSGROVE GENERAL HOSPITAL. (423 Beds.)** HOUSE OFFICER (surgery) required at the above Hospital. Approved pre-registration appointment. Post vacant July, 1956.

Applications, with the names of 3 referees, to the Hospital Secretary.

**BURTON UPON TRENT. THE GENERAL HOSPITAL.** HOUSE SURGEON required at the above Hospital as from 6th June, 1956. Post recognised for pre-registration purposes.

Apply Group Secretary.

**BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE.** Applications are invited for the appointment of REGISTRAR to the acute medical beds at the above Hospital of 259 Beds (including 79 acute medical, 34 paediatrics, 6 chest diagnostic, and 140 chronic sick). Other medical staff, in addition to visiting Consultants, are 1 Registrar to the chronic sick, 1 Resident Senior Paediatric House Officer and 2 Resident House Physicians. The post is tenable for 1 year in the first instance. Duties will include outpatient work at the Royal Victoria Hospital, Boscombe.

Forms of application, obtainable from the Group Secretary, Bournemouth and East Dorset Hospital Management Committee, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 7 days of the appearance of this advertisement.

**BOURNEMOUTH. ROYAL VICTORIA HOSPITAL,** Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT OBSTETRIC OFFICER for post becoming vacant on 14th July, 1956. There are 36 obstetric and 31 gynæcological beds and the appointment is recognised for the M.R.C.O.G. and the D.Obst.R.C.O.G., but not for pre-registration purposes.

Applications to the Hospital Secretary.

**CANTERBURY. KENT AND CANTERBURY HOSPITAL.** (277 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court Annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months appointment. Post vacant early July, 1956. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

**CARDIFF. ST. DAVID'S HOSPITAL. (640 Beds.)** SENIOR HOUSE OFFICER (resident) required from 1st August, 1956, in acute medical wards, to work under direction of Consultants.

Application form from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

**CARDIFF. ST. DAVID'S HOSPITAL. (640 Beds.) Senior** HOUSE OFFICER (resident or non-resident) required for Geriatric Unit at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

**CARMARTHEN. WEST WALES GENERAL HOSPITAL.** (188 Beds. Recognised by the Royal College of Surgeons, and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical), which will become vacant on 8th August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**CARMARTHEN. WEST WALES GENERAL HOSPITAL.** (188 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and traumatic surgery), which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, and names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**CARSHALTON, SURREY. ST. HELIER HOSPITAL.** 2 HOUSE PHYSICIANS (pre-registration posts), vacant mid-July and beginning August respectively.

Applications, stating age, experience, and qualifications, with copies of recent testimonials and the names of 2 referees, should be sent to the Secretary at above address.

**CHESTER-LE-STREET. GENERAL HOSPITAL. (204 Beds.)** HOUSE SURGEON. Approved pre-registration post. Post vacant now.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

**CHESTER-LE-STREET. GENERAL HOSPITAL. (204 Beds.)** SENIOR HOUSE OFFICER (general surgery). Post vacant now. Resident.

Apply, with particulars of age, experience, and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

**COULSDON, SURREY. CANE HILL HOSPITAL. Cane HILL HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** REGISTRAR in Psychiatry, whole-time, resident (if unmarried) or non-resident. The Hospital has 4 outpatient clinics and undertakes postgraduate teaching in association with the Institute of Psychiatry. Every facility will be given for further study. Candidates may visit the Hospital by arrangement with the Physician-Superintendent.

Application forms, returnable within 14 days, may be obtained from the Group Secretary.

**CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. OBSTETRIC AND GYNÆCOLOGICAL DEPARTMENTS. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE.** JUNIOR HOUSE OFFICER (pre-registration) required at end of July. Recognised for training for Diploma and Membership of Royal College of Obstetricians and Gynæcologists.

Applications, with full details and names of 2 referees, to the Secretary by 16th June, 1956.

**CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX.** RESIDENT JUNIOR HOUSE SURGEON appointment now vacant. Pre-registration post. Health Service terms and conditions.

Applications, stating age, nationality, qualifications and experience, with names of 2 referees, to the Group Secretary, Mid-Sussex Hospital Management Committee, as soon as possible.

**CHELTENHAM GENERAL HOSPITAL. (220 Beds.)** Applications are invited for the appointment of HOUSE PHYSICIAN (pre-registration). The post is resident and will be vacant about the middle of June. Salary and conditions of service in accordance with the National Health Service regulations.

Applications together with 2 testimonials, should be sent to—

STANLEY T. DAVIS, Secretary.

General Hospital, Cheltenham.

**CHELTENHAM GENERAL HOSPITAL. (220 Beds.)** HOUSE SURGEON required pre- or post-registration. The post offers a wide experience in general surgery, gynæcology, and orthopædic surgery. Post recognised for the F.R.C.S.

Apply Secretary, General Hospital, Cheltenham.

**CHELTENHAM GENERAL AND EYE HOSPITAL.** (170 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (casualty) required.

Applications, giving details of qualifications and experience and names of 3 referees, to be sent to the Group Secretary, General Hospital, Sandford-road, Cheltenham.

**CHELMSFORD HOSPITALS.** Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large surgical units, for a period of 12 months.

Applications, stating age, qualifications and experience, with recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

**CHELMSFORD. ST. JOHN'S HOSPITAL.** House PHYSICIAN (pre-registration, first, second, or third appointment), Male or Female, to commence as soon as possible.

Applications, stating age, nationality, qualifications, and experience, together with recent testimonials, to the Secretary, Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

**CROYDON GENERAL HOSPITAL.** (200 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CASUALTY REGISTRAR, post vacant. Senior Casualty Officer in a busy department. Post recognised for Final F.R.C.S. examination. Accommodation may be inspected on application to Hospital Secretary.

Application forms obtainable from Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned within 14 days.

**CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE.** SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (whole-time) for Group duty, vacant 3rd August, 1956. Post resident or non-resident (accommodation may be inspected on application to Hospital Secretary). Duties mainly at Croydon General Hospital (200 Beds) and Mayday Hospital (611 Beds). Candidates must have experience in anæsthetics and possession of D.A. an advantage. Post recognised for F.F.A.R.C.S. and D.A.

Application forms obtainable from Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned within 14 days.

**CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE.** SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (whole-time) for Group duty, vacant now. Post resident or non-resident (accommodation may be inspected on application to Hospital Secretary). Duties mainly at Croydon General Hospital (200 Beds) and Mayday Hospital (611 Beds). Candidates must have experience in anæsthetics and possession of D.A. an advantage. Post recognised for F.F.A.R.C.S. and D.A.

Application forms obtainable from Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned within 14 days.

**CROYDON. MAYDAY HOSPITAL.** (611 Beds.) Senior HOUSE SURGEON (resident) for Fracture and Orthopædic Unit, as from 18th June for 6 months in first instance.

Application forms to be returned immediately to Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon.

**DERBY. DERBYSHIRE ROYAL INFIRMARY.** House SURGEON (pre-registration) or SENIOR HOUSE OFFICER (general surgery), vacant 4th July, 1956.

Apply, stating full particulars with copies of 2 recent testimonials, to Secretary.

**DONCASTER ROYAL INFIRMARY.** Applications are invited for the post of SENIOR HOUSE OFFICER in Ophthalmology. Recognised for D.O.

Applications to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

**DURHAM. UNIVERSITY OF DURHAM AND** SHEFFIELD REGIONAL HOSPITAL BOARD. Joint Training Scheme for Registrars in Psychological Medicine. Applications are invited for a number of posts of REGISTRAR in Psychiatry. It is proposed in the first instance that Registrars will be allotted to each of the following hospitals: Kingsway, Derby; Saxondale, Radcliffe-on-Trent; Middlewood, Sheffield; and possibly 1 other mental hospital. Appointments to commence in August/September, 1956. These posts form a part of the Joint Training Scheme in Psychiatry sponsored by the Newcastle and Sheffield Regional Hospital Boards, in conjunction with Durham University. The tenure will be subject to annual review and the duties will be changed periodically in order to provide varied experience, including mental deficiency. The normal period of training will be 2–3 years according to the previous experience of the trainee. The regulations for the D.P.M. (Durham) require no special course of study for Part I of the examination. In order to take Part II the candidate will be given 6 months study leave with pay to attend a full-time course of instruction at Newcastle under the ægis of the Professorial Department of Psychological Medicine. Full particulars of the scheme may be obtained from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield.

Applications should be made to the Secretary of the Board by 25th June, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

**EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom,** SURREY. RESIDENT HOUSE PHYSICIAN required 1st August, Pre-registration post.

Applications, stating age, qualifications and experience with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

**EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom,** SURREY. RESIDENT HOUSE SURGEON required 5th August. Pre-registration post, recognised for F.R.C.S.

Applications, stating age, qualifications and experience with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary, at above address.

**EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom,** SURREY. RESIDENT HOUSE SURGEON required 1st July, for Orthopædic, E.N.T. and Eye Departments. Pre-registration post.

Applications, stating age, qualifications and experience with copies of 2 recent testimonials, should be sent immediately to Group Secretary at above address.

**EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom,** SURREY. RESIDENT SENIOR HOUSE OFFICER (obstetrics and gynæcology) required 1st August. 12 months appointment. Post recognised in obstetrics by the College for M.R.C.O.G. and D.Obst.R.C.O.G. purposes. Candidates may visit Hospital by appointment with Consultant concerned.

Applications, stating age, qualifications and experience with copies of 3 recent testimonials, should be sent by 23rd June to Group Secretary at above address.

**EAST ANGLIAN REGIONAL HOSPITAL BOARD.** SURGICAL REGISTRAR (casualty), Peterborough Memorial Hospital (150 Beds). 6 months of tenure recognised for F.R.C.S. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 18th June, 1956. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

**EAST KILBRIDE, LANARKSHIRE. HAIRMYRES** HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) at the above Hospital. Duties will be mainly at Hairmyres Hospital, but will include 2 sessions at the Victoria Infirmary, Glasgow. Experience in anæsthetics is desirable but not essential.

Applications, stating age, qualifications and experience, with the names of 2 referees, should be sent to the Physician-Superintendent, Hairmyres Hospital.

**EDGWARE GENERAL HOSPITAL, Edgware, Middlesex.** RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 27th July, 1956. 6 months appointment.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 testimonials, to Medical Director of Hospital by 23rd June, 1956.

**EXETER. ROYAL DEVON AND EXETER HOSPITAL.** Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (surgical), Resident Surgical Officer. The post is recognised for the F.R.C.S. examination. Vacant 21st July, 1956.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 23rd June, 1956.

**GLASGOW NORTH-EASTERN MENTAL HOSPITALS** BOARD OF MANAGEMENT require SENIOR HOUSE OFFICER (resident) for Woodilee Mental Hospital, Lenzie (1302 Beds). Salary £745 p.a. Hospital approved for purposes of D.P.M. Facilities for modern methods of treatment. Flat can be made available as married quarters.

Applications, stating age, training, experience and qualifications, and names of 2 referees, to the Medical Superintendent.

**GLASGOW ROYAL INFIRMARY.** Senior House Officer in Anæsthetics. Duties at above Infirmary.

Write, giving 3 names for reference, not later than 14th June, 1956, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

**GLASGOW. STOBHILL GENERAL HOSPITAL.** Acute GERIATRIC UNIT. (70 Beds.) Applications are invited for the post (pre-registration) of HOUSE OFFICER for the 6 months beginning 1st August, 1956, and should be addressed to the Medical Superintendent, giving the names of 2 referees.

**GLASGOW. STOBHILL GENERAL HOSPITAL.** Dermatology UNIT. (120 Beds.) Applications are invited for the post (pre-registration) of HOUSE OFFICER for the 6 months beginning 1st August, 1956, and should be addressed to the Medical Superintendent, giving the names of 2 referees.

**GODALMING, SURREY. KING GEORGE V HOSPITAL** FOR DISEASES OF THE CHEST. GODALMING, MILFORD AND LIPHOOK GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident). Salary and deduction for board, lodging, &c., in accordance with national scale (£745). All modern forms of treatment carried out, including major thoracic surgery, a proportion of the beds being set aside for non-tuberculous thoracic surgery. The Hospital is associated with a chest clinic.

Apply, giving names of 3 referees, to the Physician-Superintendent not later than 23rd June, 1956.

**GRANTHAM AND KESTEVEN GENERAL HOSPITAL.** (118 Beds.) RESIDENT HOUSE PHYSICIAN (Senior House Officer or pre-registration intern). General medical and pædiatric. Post vacant 17th July, 1956.

Applications, with full details and names of 2 referees, to Secretary, 101, Manthorpe-road, Grantham.

**GUILDFORD. ROYAL SURREY COUNTY HOSPITAL.** (233 Beds.) SENIOR HOUSE OFFICER required 7th July for E.N.T. Department. Post recognised for D.L.O. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

**GUILDFORD. ROYAL SURREY COUNTY HOSPITAL** (233 Beds.) RESIDENT HOUSE SURGEON required for general surgery. Post is now vacant and tenable for 6 months. It is approved for pre-registration practitioners and recognised for the F.R.C.S. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

**HALIFAX. ROYAL HALIFAX INFIRMARY.** (301 Beds.) SENIOR HOUSE OFFICER in Casualty and Orthopædic Surgery required. Post recognised for F.R.C.S. Salary £745 p.a., with deduction of £130 p.a. for board, residence, &c.

Apply to the Group Secretary, Royal Halifax Infirmary, Halifax.

**GRIMSBY HOSPITAL MANAGEMENT COMMITTEE.** 2 HOUSE PHYSICIANS (pre-registration or fully registered) or SENIOR HOUSE OFFICERS (medicine) required at end of July; 1 for Scartho Road Hospital and 1 for Grimsby General Hospital. Units of 51 and 56 Beds respectively. Medical Library and reading facilities available.

Applications for either post, with names of 2 referees, to the Secretary, Grimsby General Hospital, Grimsby, Lincs.

**HARROGATE AND DISTRICT GENERAL HOSPITAL.** (253 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic surgery). Recognised for F.R.C.S. Immediate vacancy.

Applications, together with the names of 2 referees, should be forwarded to the Hospital Secretary, Harrogate and District General Hospital, Harrogate, Yorkshire.

**HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.)** HOUSE PHYSICIAN (resident), pre-registration post vacant 13th July, 1956.

Apply Hospital Administrator by 16th June.

**HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL.** (163 Beds. Recognised by the Royal College of Surgeons, and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical), which will become vacant on 1st August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL.** (163 Beds. Recognised by the Royal College of Surgeons, and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (medical), which will become vacant on 1st August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**HEREFORD COUNTY HOSPITAL. (335 Beds.)** House OFFICER (surgery) required. Hospital recognised for F.R.C.S.

Applications, with copies of 2 recent testimonials, to Medical Superintendent, County Hospital.

**HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital** situated 21 miles from London.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Prediatrician and Ophthalmic Consultant. Salary £745 p.a., less £130 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence 25th June, 1956.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

**HOUNSLOW HOSPITAL, Staines-road, Hounslow,** MIDDLESEX. (General Acute—81 Beds.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON. Recognised pre-registration appointment for 6 months. Post now vacant.

Applications, stating qualifications and age, together with copies of up to 3 recent testimonials, or names for reference, to the Hospital Secretary.

**HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.)** Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties on 12th June, 1956. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.

The Royal Infirmary, Huddersfield.

**HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.)** 2 HOUSE SURGEONS required to commence duties early in July. The posts are recognised as pre-registration appointments and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.

The Royal Infirmary, Huddersfield.

**HUNTINGDON COUNTY HOSPITAL. Applications are** invited for the post of HOUSE OFFICER (surgical), vacant mid-June. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

**ILFORD. KING GEORGE HOSPITAL, Eastern-avenue.** There will be vacancies for the following at above Hospital:—

HOUSE SURGEON, 14th June, 1956 (second post pre-registration).

HOUSE SURGEON, 15th July, 1956 (first or second post pre-registration).

The posts will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.

**IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea** ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 13th June, 1956. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to Hospital Secretary.

**IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea** ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department, vacant on 13th June, 1956. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

**IPSWICH AND EAST SUFFOLK HOSPITAL. Heath** ROAD WING, IPSWICH. (270 Beds.) Applications invited for 2 posts of HOUSE SURGEON (pre-registration), to General Surgeons. Now vacant. Recognised for R.C.S. examinations.

Applications, with full details, and copies of recent testimonials, to Hospital Secretary.

**KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL,** WORCESTERSHIRE. (112 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Post vacant June, 1956.

Applications, with the names of 3 referees, to the Hospital Secretary.

**LANCASTER. ROYAL LANCASTER INFIRMARY.** (230 Beds.) SENIOR HOUSE OFFICER (casualty). The successful applicant will work with the Specialist Orthopædic Unit, and the post, vacant shortly, is recognised for F.R.C.S.

Applications, with names of 2 referees, to be addressed to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

**LANCASTER. ROYAL LANCASTER INFIRMARY.** (230 Beds.) RESIDENT SENIOR HOUSE OFFICER (orthopædics). The successful applicant will work with an Orthopædic and Traumatic Specialist Unit, and the post, vacant shortly, is recognised for F.R.C.S.

Applications, with names of 2 referees, to be addressed to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

**LEEDS REGIONAL HOSPITAL BOARD. Registrar** vacancies.

*Anæsthetics*

York A and Tadcaster Group. Approximately 375 beds in the surgical specialties. Non-resident.

*Chest Diseases*

Scotton Banks Sanatorium, Knaresborough (306 Beds). Visiting staff includes Teaching Hospital Consultants. Resident.

*General Medicine*

Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and Rheumatism Clinic, General Infirmary, Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

*Orthopædic Surgery*

St. James's Hospital, Leeds (64 orthopædic beds), and The Public Dispensary, Leeds. Non-resident.

*Psychiatry*

(i) Clifton Hospital, York (1100 Beds). Resident or non-resident.

(ii) Menston Hospital, near Leeds (2500 Beds). Resident.

If desired, facilities for attending Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, The Joint Registrars Committee, Park-parade, Harrogate, by 21st June, 1956.

*AMENDED ADVERTISEMENT*

**LINCOLN. LAWN HOSPITAL, Union-road. (Mental** Hospital for Private Patients—100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (full-time or Locum Tenens). Salary and conditions of service in accordance with latest recommendations of Whitley Council. A small flat is available.

Apply as early as possible to the Medical Superintendent.

**LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS.** Applications are invited for a post of REGISTRAR in Radiology to take up duty as soon as possible for the period to 30th September, 1957. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 23rd June, 1956, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

**LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS.** LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for a post as REGISTRAR in Otorhinolaryngology to take up duty as soon as possible for the period to 30th September, 1957. Annual reappointment thereafter until completion of the normal period of training will be considered without further need for application.

Apply by 23rd June, 1956, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

**MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL.** (Non-Sectarian—104 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in Surgery, to act as Deputy Resident Surgical Officer. Recognised for F.R.C.S.

Applications, with full details and names of 2 referees, by 23rd June, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

**MANCHESTER AND SALFORD HOSPITAL FOR SKIN** DISEASES, Quay-street, MANCHESTER, 3. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (resident). The appointment is for a period of 12 months.

Applications, stating age, qualifications with dates, nationality and accompanied by copies of 2 recent testimonials, to be sent immediately to the Hospital Secretary.

**MANCHESTER, 20. CHRISTIE HOSPITAL AND HOLT** RADIUM INSTITUTE. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgery) at the above Hospital. This is a suitable post for candidates studying for the F.R.C.S.

Applications, stating age, qualifications, nationality, present post, experience, and names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20, as soon as possible.

**MANCHESTER, 19. THE DUCHESS OF YORK HOSPITAL FOR BABIES.** SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. There will be a vacancy at the above Hospital, which is associated with the Manchester University for teaching purposes, for a RESIDENT HOUSE OFFICER (Male or Female), post- or second pre-registration, for 6 months commencing 1st July, 1956.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer at the above address.

**MANCHESTER. DUCHESS OF YORK HOSPITAL FOR BABIES, LEVENSHULME, MANCHESTER, 19.** SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for 12 months, resident or non-resident. Post is the senior of 3. D.C.H. or M.R.C.P. an advantage but not essential. The Hospital is associated with the University Department of Child Health for teaching purposes.

Applications immediately, stating age, qualifications, experience, and the names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

**MANCHESTER. WEST MANCHESTER HOSPITAL** MANAGEMENT COMMITTEE.

**Park Hospital, Davyhulme** (General Hospital—433 Beds)

HOUSE OFFICER (general medicine) required (pre-registration). Post vacant end July, 1956.

HOUSE OFFICER (obstetrics) required (pre-registration). Post recognised for M.R.C.O.G. examination. Post vacant end July, 1956.

SENIOR HOUSE OFFICER (pædiatrics) required. Hospital recognised for training for Diploma in Child Health. Post vacant end July, 1956. Application forms from Secretary.

**MANCHESTER, 23. WYTHENSHAWE HOSPITAL.** SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant 30th July. The post offers facilities for experience in all branches of pathology; previous experience in the specialty is not essential.

Applications, stating age, experience, qualifications, and the names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

**MANCHESTER, 20. WITHINGTON HOSPITAL. South** MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), which will be vacant on 14th August, 1956. Previous experience in pathology not essential, the post affording opportunities for gaining experience in all branches of clinical pathology.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to the Group Secretary, Withington Hospital, Manchester, 20.

**MANCHESTER (near). ROYAL MANCHESTER** CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. SALFORD HOSPITAL MANAGEMENT COMMITTEE.

MEDICAL HOUSE OFFICER.

SURGICAL HOUSE OFFICER.

Applications invited for above resident appointments, both vacant 1st August, 1956. Each appointment is for a period of 6 months and is open to pre-registration graduates.

Applications to Hospital Secretary not later than 25th June, 1956.

**MANCHESTER (near). ROYAL MANCHESTER** CHILDREN'S HOSPITAL. Applications invited for resident appointment of HOUSE PHYSICIAN (Professorial Unit, University Department of Child Health), House Officer status, vacant 1st August, 1956. The appointment is for a period of 6 months and is open to pre-registration graduates.

Applications to Hospital Secretary not later than 25th June, 1956.

**MANCHESTER REGIONAL HOSPITAL BOARD invites** applications for the post of RESIDENT REGISTRAR in General Medicine, vacant 1st August, 1956. The duties will be with the Stockport and Buxton Hospital Management Committee with main duties at Stepping Hill Hospital and Stockport Infirmary.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be forwarded to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

**MANCHESTER REGIONAL HOSPITAL BOARD and** THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. SENIOR REGISTRAR in Pædiatrics at the Royal Manchester Children's Hospital, Pendlebury, and St. Mary's Hospitals, Manchester. Post vacant 1st September, 1956.

Forms of application obtainable from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, should be returned by 18th June, 1956.

**MANCHESTER REGIONAL HOSPITAL BOARD invites** applications for the post of REGISTRAR in Anæsthetics which may be either resident or non-resident. The main duties will be with the Stockport and Buxton Hospital Management Committee with some duties in the Macclesfield and District Hospital Management Committee Group. The post is recognised for the D.A. and F.F.A.R.C.S., and would suit a candidate wishing to study for higher qualification.

Applications, stating age, qualifications, and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

**MAIDSTONE. WEST-KENT GENERAL HOSPITAL.** (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months appointment. Post vacant 1st July, 1956. Salary at the rate of £425, £475 or £525 according to experience. A deduction at the rate of £125 a year is made for board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

**MAIDENHEAD HOSPITAL, Berkshire. Applications** invited for post of HOUSE SURGEON, vacant 21st June. Preference given to persons seeking a pre-registration post.

Applications, stating age, nationality and qualifications with names of 3 referees, to Secretary.

**MAIDENHEAD HOSPITAL, Berkshire. Applications** invited from registered practitioners for post of CASUALTY OFFICER, vacant now. Post recognised for F.R.C.S. Salary on House Officer scale plus £50 p.a.

Applications, stating age, qualifications and nationality, with copies of testimonials or names of 3 referees, to Secretary.

**MARKET DRAYTON (near), SHROPSHIRE. CHESHIRE** JOINT SANATORIUM. (305 Beds.) RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer according to experience). The post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

**MID-KENT HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the West Kent General Hospital, and the Kent County Ophthalmic and Aural Hospital, Maidstone (total beds 254). The post, which is of Senior House Officer grade, will be vacant June, 1956, and carries a salary of £745 a year, less £150 for residential emoluments. Excellent experience under Consultant Anæsthetists is available, and the post is recognised for the F.F.A.R.C.S. examination.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 suitable referees, should be forwarded to the Administrative Officer, West Kent General Hospital, Maidstone.

**MORPETH (near). MONA TAYLOR MATERNITY** HOSPITAL, STANNINGTON, near MORPETH, NORTHUMBERLAND. (25 Beds.) RESIDENT SENIOR HOUSE OFFICER (obstetrics) required early July. Unfurnished semi-detached house available for married man at approximately 23s. per week, inclusive.

Applications, stating age, nationality and full particulars of qualifications and experience, together with the names of 2 referees, should be forwarded to the Group Secretary, Wansbeck Hospital Management Committee, Group Administrative Offices, 12, Stanley-street, Blyth, Northumberland.

**NEWCASTLE. THE UNITED NEWCASTLE UPON** TYNE HOSPITALS. Applications are invited for the whole-time appointment of SENIOR HOUSE OFFICER in the Department of Radiology (Diagnostic). The appointment which is tenable at the Royal Victoria Infirmary is for 1 year, at the end of which it is expected that the appointee will have secured Part I of the D.M.R.(D.). He/she will then be eligible for an appointment as Registrar in the Department of Radiology (Diagnostic).

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

**NEWCASTLE. THE UNITED NEWCASTLE UPON** TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. DEPARTMENT OF BACTERIOLOGY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (non-resident). The successful applicant will assist in the general work of the laboratory, including blood-transfusion serology. Previous laboratory experience is not essential. The appointment will be for 1 year and will be subject to terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

**NEWCASTLE. THE UNITED NEWCASTLE UPON** TYNE HOSPITALS. Applications are invited for the whole-time non-resident appointment of REGISTRAR in the Department of Radiology (Diagnostic). Candidates should preferably possess a recognised Diploma in Radiology or hold the M.R.C.P. or F.R.C.S. The appointment is for 1 year in the first instance tenable at the Royal Victoria Infirmary and if an extension of 1 year is granted the appointee may be seconded for special experience to a hospital under the Newcastle Regional Hospital Board. The appointment will be subject to terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

**NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** Whole-time GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR (resident) required for duties mainly at St. Albans City Hospital (384 Beds). Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts, by 25th June, 1956.

**NOTTINGHAM GENERAL HOSPITAL. Resident Pre-**registration HOUSE PHYSICIANS required. Duties to commence about end of June.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL. Resident pre-**registration or registered HOUSE SURGEONS required 27th June and 8th July.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL. (441 Beds. Recognised for training for F.R.C.S.)** SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT CASUALTY REGISTRAR required. This busy department provides excellent experience. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 18th June, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

**NOTTINGHAM. CITY HOSPITAL. (811 Beds.)** Applications are invited for the post of HOUSE OFFICER (obstetrics and gynæcology), recognised for pre-registration purposes, which will be graded Senior House Officer or House Officer in accordance with experience. Recognised for the M.R.C.O.G. and D.Obst.R.C.O.G. Post vacant on 16th July, 1956.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

**NOTTINGHAM. HEATHFIELD HOSPITAL (Infectious Diseases),** Hucknall-road, NOTTINGHAM. Resident Locum MEDICAL OFFICER (Male or Female) required for holiday period of 8 weeks (July and August). Junior Hospital Medical Officer rate £17 10s. per week, less residential emoluments. Previous fever experience not essential.

Applications, with copies of 2 recent testimonials, as soon as possible to Physician-Superintendent.

**NOTTINGHAM. HIGHBURY HOSPITAL.** Senior MEDICAL HOUSE OFFICER required at the above Hospital. Resident. Duties to commence on or about 17th July, 1956. The successful candidate will, in addition to medical duties, have an opportunity of assisting in the Obstetric Unit. This post will be accepted as a general medical appointment entry to the M.R.C.O.G. examination.

Apply in writing, stating age, qualifications and experience, together with copies of testimonials, to the Group Secretary, General Hospital, Nottingham.

**NOTTINGHAM. HIGHBURY HOSPITAL.** Applications are invited from fully registered medical practitioners for the post of SENIOR HOUSE OFFICER in the Obstetrical and Gynæcological Department (41 obstetric beds, 11 gynæcological beds and a small block for puerperal pyrexia). The appointment is for a period of 12 months to commence 1st July. The Hospital is recognised for the M.R.C.O.G. (obstetrics only). Previous obstetric experience required.

Applications, stating age, qualifications, and experience also nationality, together with copies of recent testimonials, to be sent to Group Secretary, General Hospital, Nottingham.

**NOTTINGHAM (near). SAXONDALE HOSPITAL,** RADCLIFFE-ON-TRENT, near NOTTINGHAM. (930 Beds. Recognised for D.P.M. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR or JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry required. House available.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 18th June, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

**NEWTON ABBOT HOSPITAL. Locum Senior House** OFFICER (medicine), required from 1st to 31st July, 1956, for above Hospital. Duties divided equally between 20 acute medical beds and 140 geriatric beds. Also required to stand in when Senior House Surgeon otherwise engaged. Married quarters available.

Applications, with copy testimonials, to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

**NEWTON ABBOT HOSPITAL. (General Section—65** Beds.) RESIDENT SENIOR HOUSE SURGEON (Male or Female) required early June, 1956. Married quarters available.

Applications (quoting ref. F.364/35), stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

**OLDHAM AND DISTRICT HOSPITAL MANAGEMENT** COMMITTEE. Applications are invited for the appointment of SENIOR ANÆSTHETIC HOUSE OFFICER (resident) for duties at the Oldham Royal Infirmary (190 Beds) and the Oldham and District General Hospital (965 Beds), vacant immediately. The hospitals are recognised for the D.A.

Applications, giving age, sex, nationality, qualifications and previous appointments, together with the names of 3 persons to whom reference may be made if desired, should be forwarded forthwith to the Group Secretary, Oldham and District Hospital Management Committee, Central Offices, Rochdale-road, Oldham.

**PAISLEY. ROYAL ALEXANDRA INFIRMARY. Junior** HOSPITAL MEDICAL OFFICER required for Orthopædic Unit.

Applications to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

**PLYMOUTH. SOUTH DEVON AND EAST CORNWALL** HOSPITAL.

SENIOR HOUSE OFFICER in Surgery, vacant immediately. Recognised for the F.R.C.S. Greenbank Road Section.

SENIOR HOUSE OFFICERS in Anæsthetics, vacancies 1st September, 1st October, 1956. Recognised for the D.A. and F.F.A.R.C.S. The appointments will be for a period of 12 months. South Devon and East Cornwall Hospital, Plymouth.

HOUSE SURGEONS (pre-registration posts), vacancies June and 1st July, 1956. Recognised for the F.R.C.S. Greenbank Road Section.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

**PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL,** CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for M.R.C.O.G., D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.) RESIDENT SENIOR HOUSE OFFICER (surgical) to commence 24th July, 1956.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

**POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth** AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (pre-registration intern) for post becoming vacant on 9th July, 1956.

Applications to the Hospital Secretary.

**POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth** AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT MEDICAL REGISTRAR. The post is tenable for 1 year in the first instance and becomes vacant on 22nd August, 1956.

Forms of application, obtainable from the Group Secretary, Bournemouth and East Dorset Hospital Management Committee, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

**PORTSMOUTH GROUP HOSPITAL MANAGEMENT** COMMITTEE.

**Royal Portsmouth Hospital** (65 medical beds)
HOUSE PHYSICIAN (pre-registration post), vacant 1st July, 1956.

**Saint Mary's Hospital**
SENIOR HOUSE OFFICER (gynæcology) required. The department consists of 50 Beds and offers excellent facilities for training. Recognised for the M.R.C.O.G. Vacant 16th June, 1956.

**Royal Portsmouth Hospital** (Orthopædic Department —104 Beds)
HOUSE OFFICER (pre-registration), vacant now.

**Royal Portsmouth Hospital**
HOUSE OFFICER for pædiatric and medical beds (30 Beds), pre-registration post; vacant 16th July.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.
35, Grove-road South, Southsea.

**PORTSMOUTH GROUP HOSPITAL MANAGEMENT** COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of E.N.T. REGISTRAR, vacant 23rd July, 1956. Duties will be at Queen Alexandra Hospital and associated Units. Post recognised for F.R.C.S. and D.L.O. Accommodation available for successful applicant if unmarried.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 18th June, 1956. Canvassing will disqualify. Candidates may visit the above Hospital by arrangement with the Secretary of the Group.

**READING. ROYAL BERKSHIRE HOSPITAL. (390** Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of a SENIOR HOUSE OFFICER (anæsthetics), vacant 1st August next for a period of 1 year. Post recognised for F.F.A.R.C.S. Salary £745 p.a., less £125 for board-residence.

Write, stating age, qualifications with dates, nationality and present post together with the names of 2 referees, to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

*AMENDED ADVERTISEMENT*

**RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.)** Applications are invited for the appointment of CASUALTY OFFICER (Senior House Officer grade) at the above Hospital, commencing 14th July, 1956. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, accompanied by copies of 2 recent testimonials, should be sent to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl, within 10 days from the date of publication of this advertisement.

**SWANSEA HOSPITAL, Swansea. (403 Beds.) Glantawe** HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the non-resident appointment of CASUALTY OFFICER of Junior Hospital Medical Officer grade at the above Hospital.

Full particulars, stating age, qualifications and experience, should be forwarded immediately to the Hospital Secretary.

**SCOTLAND. EASTERN REGIONAL HOSPITAL** BOARD. Dermatology. Applications are invited for the post of REGISTRAR in Dermatology (from 1st October, 1956) at Dundee Royal Infirmary, the main general teaching hospital (of 510 Beds) associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, "Bracknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 16th June, 1956.

**SALISBURY GENERAL HOSPITAL. (Orthopædic** DEPARTMENT.) Applications are invited for the post of SENIOR HOUSE OFFICER (resident) or RESIDENT HOUSE SURGEON which is also recognised for pre-registration candidates and becomes vacant on 1st August, 1956. The Department has over 50 Beds and a large outpatient turnover, dealing with fractures and all types of orthopædic surgery.

Applications, stating age, nationality, qualifications and experience, and naming 2 referees, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

**SALISBURY GENERAL HOSPITAL.** Pædiatric House OFFICER, Odstock Hospital. 55 medical and surgical beds. Recognised for D.C.H. Vacant 25th July.

Applications, with names and addresses of 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

**SALISBURY GENERAL HOSPITAL.** Applications are invited for the post of RESIDENT or NON-RESIDENT CASUALTY OFFICER (Senior House Officer) for a period of 12 months. Post is recognised for F.R.C.S. and is vacant 9th July, 1956.

Applications, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

**SALFORD ROYAL HOSPITAL.** Salford Hospital MANAGEMENT COMMITTEE. Locum ANÆSTHETIST required, mid-June. To be resident or non-resident. Salary £17 10s. per week.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be sent immediately to the Hospital Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, Lancashire.

**SALFORD ROYAL HOSPITAL.** (258 Beds.) Salford HOSPITAL MANAGEMENT COMMITTEE. ANÆSTHETIST required (Senior House Officer status) to commence duty in June and to be resident at Salford Royal Hospital, with occasional duties at the Royal Manchester Children's Hospital. In addition to training in anæsthesia for general surgery, both adult and children, special facilities are available for gaining experience in neuro-surgical and other surgical specialties. The post is recognised for the F.F.A.R.C.S. and encouragement will be given to the successful candidate to work for this examination.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be sent immediately to the Hospital Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, Lancashire.

**SHEFFIELD. CITY GENERAL HOSPITAL.** Applications are invited for the following resident (pre-registration) posts becoming vacant on 15th July, 1956 :—

HOUSE PHYSICIAN (general medicine).
HOUSE PHYSICIAN (pædiatrics).
HOUSE SURGEON (orthopædics).

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, should be forwarded to the Group Secretary, Nether Edge Hospital, Sheffield, 11.

**SHEFFIELD. CITY GENERAL HOSPITAL.** Department OF PATHOLOGY GROUP LABORATORY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (clinical pathology). Resident accommodation is available and optional. Opportunities for training in morbid anatomy, biochemistry, hæmatology and bacteriology. The work of this and the associated hospitals offers excellent experience to graduates who wish to make pathology their permanent career. The post is recognised for the D.Path.

Apply, giving details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

**SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time NON-RESIDENT SENIOR REGISTRAR in Children's Psychiatry required for Mapperley Hospital, Nottingham (1115 Beds). D.P.M. essential. Appointment for 1 year in first instance, reviewable annually.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 18th June, 1956.

**SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS.** Applications invited for the non-resident post of REGISTRAR to the Department of Radiology at the Royal Infirmary/Royal Hospital Units. Post vacant 6th August.

Applications, with the names of 3 referees, should be sent by 20th June, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

**SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS/** SHEFFIELD REGIONAL HOSPITAL BOARD. REGISTRAR required at the Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases. Duties to include clinical research.

Applications, with the names of 3 referees, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, as soon as possible.

**SHREWSBURY. ROYAL SALOP INFIRMARY.** Ortho-PÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination. Vacant 24th July, 1956.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

**SHREWSBURY. ROYAL SALOP INFIRMARY/COP-**THORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, for Pre-registration Service, vacant 17th July, 1956.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

**SHREWSBURY. ROYAL SALOP INFIRMARY/COP-**THORNE HOSPITAL. (500 Beds.) Senior House Officer to work as CLINICAL PATHOLOGIST to Group Laboratory. Appointment tenable for 1 year, resident or non-resident, vacant 31st July, 1956. A Unit of the Public Health Laboratory Service is housed in the same building, and there are facilities for training in all the 4 main branches of pathology.

Applications to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury, naming 3 referees.

**SOUTHAMPTON GENERAL HOSPITAL.** (471 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEONS required beginning of June. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

**SOUTH EAST METROPOLITAN REGIONAL HOS-**PITAL BOARD. Applications are invited for a whole-time appointment as ANÆSTHETIST (second year Registrar) to fill a vacancy in the approved establishment at Eastbourne Group of hospitals. The salary will be £965 p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications, and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 23rd June, 1956.

**SOUTH EAST METROPOLITAN REGIONAL HOS-**PITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in E.N.T. Surgery to fill a vacancy in the approved trainee establishment at the Medway and Gravesend Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 23rd June, 1956.

**SOUTH EAST NORTHUMBERLAND HOSPITAL MAN-**AGEMENT COMMITTEE. Applications are invited for the following pre-registration appointments which become vacant during July, 1956.

**Preston Hospital**
1 HOUSE PHYSICIAN.
1 HOUSE SURGEON.
**Tynemouth Victoria Jubilee Infirmary**
1 HOUSE PHYSICIAN.
1 HOUSE SURGEON.

Applications to Group Secretary, Preston Hospital, Preston-road, North Shields.

**STAFFORD. STAFFORDSHIRE GENERAL INFIR-**MARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON (pre-registration post), vacant 10th July, 1956. At end of term of service the successful applicant will be considered for appointment to a pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

**STOCKPORT INFIRMARY, Stockport.** (163 Beds.) Applications are invited for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER (medicine).

Applications, stating age, experience, and qualifications together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, immediately.

**STOCKPORT. STEPPING HILL HOSPITAL.** (535 Beds.) STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics). The post which may be either resident or non-resident becomes vacant on 1st August, 1956.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

**STOKE-ON-TRENT. CITY GENERAL HOSPITAL.** HOUSE OFFICER (general surgery), vacant now. Pre-registration post. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

**SWINDON AND DISTRICT HOSPITAL MANAGEMENT** COMMITTEE. SWINDON HOSPITALS. Applications invited for post of RESIDENT HOUSE PHYSICIAN in Acute Medical Unit of 64 Beds at St. Margarets Hospital. Recognised for training under pre-registration internship regulations and vacant on 5th July, 1956.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

**SWINDON AND DISTRICT HOSPITAL MANAGE-**MENT COMMITTEE. SWINDON HOSPITALS. Applications invited for post of RESIDENT HOUSE SURGEON for General Surgical Unit of 80 Beds at Victoria Hospital. Recognised for F.R.C.S. and training under pre-registration internship regulations, and vacant on 17th July, 1956. Married accommodation available.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, by 25th June, 1956.

**TORQUAY. TORBAY HOSPITAL.** (166 general beds.) RESIDENT HOUSE OFFICER (surgical), Male or Female, required middle June. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, and age together with copy testimonials (quoting reference F.955/70), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

**TAPLOW, near MAIDENHEAD. CANADIAN RED** CROSS MEMORIAL HOSPITAL. SENIOR HOUSE OFFICER (anæsthetics) required. Post which is tenable for 1 year will be resident.

Applications, with names of 2 referees, to Secretary.

**TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL.** HOUSE PHYSICIAN required for Special Unit for Research in Juvenile Rheumatism, vacant 11th July. Post offers scope for those interested in research, paediatrics, rheumatology or cardiology.

Applications, stating age, qualifications and experience with dates, with copies of 2 testimonials, to Secretary.

**WARRINGTON INFIRMARY. (172 Beds.) Applications** are invited for the vacant post of RESIDENT ANÆSTHETIST (Male or Female). Graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

**WARRINGTON INFIRMARY. (172 Beds.) Applications** are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female), now vacant. The post is graded Junior Hospital Medical Officer. Scale of salary £775–£50–£1075, less a deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.
(Tel. No. Warrington 1666.)

**WELSH REGIONAL HOSPITAL BOARD. Registrar** (anæsthetics) to serve Caernarvon and Anglesey Hospital Management Committee Group. Successful applicant based Caernarvon and Anglesey General Hospital, Bangor, will work at other hospitals in Group. Post recognised for F.F.A.R.C.S. and D.A. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

**WELLS, SOMERSET. MENDIP HOSPITAL.** Applications are invited for the appointment of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER at the above Mental Hospital. Salary and conditions of service in accordance with the Whitley Council terms for hospital medical staff. A modern bungalow is available at a rent of £69 p.a. inclusive of rates. Facilities are available for studying for the D.P.M.

Applications, giving particulars, and names and addresses of 2 referees, to be addressed to the Physician-Superintendent, Mendip Hospital, Wells, Somerset.

**WEST MALLING, KENT. LEYBOURNE GRANGE COLONY FOR MENTAL DEFECTIVES.** (1445 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required at above Colony. Salary scale £775–£50–£1075 a year. Appointment is subject to the terms and conditions of service for hospital medical and dental staffs and is for a period of 3 years in the first instance. Furnished or unfurnished accommodation available for married officer. Ample facilities for study.

Applications, with full details as to age, nationality, qualifications, present post and previous experience, together with names and addresses of 2 referees, to the Group Secretary by 23rd June, 1956.

**WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE.** REGISTRAR in Psychiatry (resident or non-resident) to assist Consultant Psychiatrist. Main centre—Billinge Hospital. Active Psychiatric Unit. Modern treatment. Over 300 admissions annually. Post recognised for D.P.M. Good training facilities.

Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

**WORCESTER ROYAL INFIRMARY. (213 Beds.) House** SURGEON (pre-registration or otherwise) required. Recognised for F.R.C.S. examination.

Applications to the Secretary.

**WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL.** (313 Beds.) CASUALTY OFFICER (Senior House Officer grade), vacant 19th July. Post recognised for the F.R.C.S. The appointment will be for 6 months in the first instance.

Applications, with copies of 2 testimonials, to the Group Secretary.

**WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL.** (313 Beds.) SENIOR HOUSE OFFICER in the Pathological Department, vacant 16th September. Preferably resident. Duties will include training in the various branches of clinical pathology, especially hæmatology. Previous experience in clinical pathology desirable, but not essential.

Applications, with copies of 2 testimonials, to the Group Secretary.

**WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL.** (313 Beds.) HOUSE SURGEON to the Senior Surgeon, vacant 1st July.

Applications, with copies of 2 testimonials, to be sent to the Group Secretary.

**WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited for the post of REGISTRAR in the Department of Pathology, preferably resident. Post vacant 23rd September. The person appointed will work at the main hospital (313 Beds). Work will include all branches of pathology. Post recognised by the Examining Board in England for Diploma in Pathology.

Application forms obtainable from Group Secretary, Royal Hampshire County Hospital, Winchester, to be completed and returned within 14 days of publication of this advertisement.

**WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** REGISTRAR in General Surgery (Registrar grade) required at the Royal Hampshire County Hospital, Winchester. Vacant early July. The Hospital is recognised for the F.R.C.S. There is also a Senior Surgical Registrar in the Hospital.

Forms of application obtainable from the Group Secretary, Royal Hampshire County Hospital, must be completed and returned within 14 days of appearance of this advertisement.

**WILLERBY, EAST YORKSHIRE (near Hull). DE LA POLE HOSPITAL.** (1174 Beds—mental illness and nervous disorders.) JUNIOR HOSPITAL MEDICAL OFFICER. Hospital has admission-rate of over 850 annually. Modern reception hospital, villas and neurosis unit. All modern methods of treatment practised. The successful candidate will be engaged on work in the admission wards to a considerable extent. Accepted for D.P.M. training. Residential.

Application forms from Group Secretary, Hull B Hospital Management Committee, at the above address.

**WINDSOR. KING EDWARD VII HOSPITAL. House** PHYSICIAN (paediatrics) required, Male or Female. Hospital recognised for D.C.H. Successful candidate will reside at Old Windsor Unit of Hospital. Preference given to persons seeking a pre-registration post. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates and experience, to Secretary.

**WOLVERHAMPTON GROUP.**

**The Royal Hospital, Wolverhampton** (an Associated Hospital of the University of Birmingham Medical School)

2 HOUSE OFFICERS (general medicine), vacant mid-July.
1 HOUSE OFFICER (paediatric), vacant 16th July. Appointment recognised for D.C.H.
1 Locum HOUSE OFFICER (paediatric), 23rd June–7th July.
3 HOUSE OFFICERS (general surgery), vacant mid-July.
1 HOUSE OFFICER (Locum general surgery). From 1st June for approximately 6 weeks.

Pre-registration posts.

SENIOR HOUSE OFFICER (Anæsthetist), vacant 19th June. Appointment recognised for D.A. and F.F.A.R.C.S.

Apply Secretary, with copies of testimonials.

**WREXHAM. MAELOR GENERAL HOSPITAL. (501 Beds.)** Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 28th June, 1956. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

**BELFAST HOSPITAL MANAGEMENT COMMITTEE, RIDDEL HOUSE, ROYAL VICTORIA HOSPITAL, BELFAST.** SENIOR HOUSE OFFICERS required immediately for the following posts :—

(*a*) General Surgery.
(*b*) Anæsthetics.

Salary £745 p.a.

Application to be made on a form obtainable from the Secretary, Belfast Hospital Management Committee, Riddel House, Royal Victoria Hospital, Belfast.

**DUBLIN. NATIONAL CHILDREN'S HOSPITAL,** Harcourt-street. HOUSE PHYSICIAN required for 6 months from 1st August, 1956. Open to post-registration candidates only.

Applications, with copies of testimonials, to Secretary, Medical Committee, by 11th June, 1956.

**DUBLIN. NATIONAL CHILDREN'S HOSPITAL,** Harcourt-street. HOUSE SURGEON required for 6 months from 1st July, 1956. Open to post-registration candidates only.

Applications, with copies of testimonials, to Secretary, Medical Committee, by 11th June, 1956.

**CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL.** Applications are invited for the post of MEDICAL OFFICER which will be vacant on 1st August, 1956, in the above Hospital. The appointment is for 6 months but is renewable for a further 6 months. Salary £575 p.a., less £125 for residential emoluments.

Applications to be submitted not later than 15th June, 1956, to the President, Public Health Committee, General Hospital, Jersey, C.I.

## Public Appointments

**BELFAST. CITY OF BELFAST. Health Committee.** Appointment of MEDICAL OFFICER (Male).

Candidates must :—

(i) Be duly qualified Male registered medical practitioners.

(ii) Hold a Degree or Diploma in Public Health, State Medicine or Sanitary Science.

(iii) Comply in all other respects with the Health Authorities (Qualifications and Duties of Medical Officers) Regulations (N.I.) 1948 (S.R. & O. 1948 No. 26).

Age limit—not more than 45 years on date of taking up duty. Salary scale £975–£50–£1375 p.a. Credit may be given for previous experience in Public Health Service. Superannuation contributions of approximately 6% of remuneration are payable. Reciprocal pension arrangements exist between the Belfast Corporation and local authorities in Great Britain. Canvassing will disqualify.

Application forms, &c., are obtainable from the Health Department (Room 79), 16, College-street, Belfast. Completed applications must reach the undersigned by 18th June.

JOHN DUNLOP, Town Clerk.

City Hall, Belfast, P.O. Box 234, 30th May, 1956.

**BIRMINGHAM. CITY OF BIRMINGHAM. Public Health** DEPARTMENT. Applications are invited for appointment of Whole-time ASSISTANT MEDICAL OFFICER (Male or Female) for maternity and child welfare. The duties will be mainly in connection with maternity and child welfare as well as the medical aspects of the care of deprived children in the care of the Children's Department. Salary scale £975–£50–£1375 p.a. with placement on the scale according to qualifications and experience. This scale is at present under review following the recent salary award. Pension scheme (including widows and orphans); medical examination.

Applications, giving full particulars of qualifications and experience, together with names of 3 persons to whom reference may be made, to be sent to Medical Officer of Health, Council House, Birmingham, 3, not later than 27th June.

**BIRMINGHAM. CITY OF BIRMINGHAM. Public Health** DEPARTMENT. Applications invited from registered medical practitioners for post of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER OF HEALTH (Male or Female). Candidates should hold the Diploma of Public Health. The successful candidate will have an opportunity to gain administrative experience in all branches of the Public Health Service, including maternity and child welfare. Salary scale £1315–£52 10s.–£1525 p.a. Commencing salary within the scale will depend upon the Medical Officer's experience. This scale is at present under review following the recent salary award. Pension scheme (including widows and orphans); medical examination. The successful applicant will be expected to take up duty in about 3 months time. The officer appointed will be required to devote his/her whole time to official duties and the appointment will be subject to 3 months notice on either side.

Applications, with the names of 3 persons to whom reference may be made, to be sent to the Medical Officer of Health, Council House, Birmingham, 3, not later than 27th June.

**DERBYSHIRE COUNTY COUNCIL. County Health** DEPARTMENT. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICERS AND SCHOOL MEDICAL OFFICERS. Applications are invited from registered medical practitioners for whole-time superannuable posts. Salary £975–£50–£1375 p.a. Car allowance.

Particulars and forms of application are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, St. Mary's Gate, Derby, to whom they should be returned by 25th June, 1956.

**FACTORY DOCTORS. Factories Acts, 1937 and 1948.** The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

| *District* | *County* | *Latest date for receipt of applications* |
|---|---|---|
| BRIGG .. .. | LINCOLN .. | 23RD JUNE, 1956 |

**GLAMORGAN EDUCATION AUTHORITY. Borough of** RHONDDA. COMMITTEE FOR EDUCATION. Applications are invited from registered medical practitioners for appointment as ASSISTANT MEDICAL OFFICER, under the supervision of the District School Medical Officer at a salary of £975 p.a., rising by annual increments of £50 to £1375 p.a. Preference will be given to candidates holding the D.P.H. or D.C.H. and experience in paediatrics will be an advantage. The appointment is superannuable and the successful candidate will be required to pass an examination as to physical fitness.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received as soon as possible. D. J. JONES, Town Clerk.

**LANCASHIRE COUNTY COUNCIL. Applications invited** from registered medical practitioners for appointments as ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Bolton and Manchester. Possession of D.P.H. desirable. Salary £975–£1375 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer, Serial 606, East Cliff County Offices, Preston.

**DIAGNOSTIC RADIOLOGIST**

An experienced Diagnostic Radiologist is required for the Department of Health and Public Welfare of the Province of Manitoba. The possession of the D.M.R.D. is essential. Starting salary $10,000 a year, on contract, renewable, and with increments. Car provided. Assisted passage may be arranged if required.

Apply, with full details and the names of 3 referees, to:

THE CIVIL SERVICE COMMISSION
Legislative Building,
Winnipeg, Canada.

**THE MEDICAL SERVICE OF THE ROYAL NAVY**

VACANCIES FOR MEDICAL OFFICERS

**Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £450 (tax free) is payable. (Longer Short Service Commissions can be obtained, as an alternative of 4 years duration with gratuity of £600 (tax free).) Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).**

**All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.**

**Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.**

**CIVIL SERVICE COMMISSION. Psychologists in the** Civil Service. The Civil Service Commissioners invite applications for 7 pensionable posts in the Admiralty, Ministry of Labour and National Service, Prison Commission, Ministry of Supply, and War Office. Age at least 21 and under 31 on 1st August, 1956, with extension for Regular Forces service. All candidates must possess 1 of the following qualifications:—

(*a*) A first or second class honours degree of a recognised University in which psychology was taken as a main subject.

(*b*) A higher degree in psychology.

(*c*) A Bachelor of Education Degree of a Scottish University or of the University of Belfast.

(*d*) A postgraduate Diploma in Psychology, following at least 2 years systematic study.

(*e*) Fellowship of the British Psychological Society.

(*f*) Associateship of the British Psychological Society (subject to certain conditions).

Candidates taking the Final examination for (*a*), (*b*), (*c*), (*d*), in summer 1956 may be considered. Exceptionally a candidate without any of these qualifications may be accepted if he has at least 3 years responsible professional experience.

London salary (for 45½-hour week) £561 at age 21 to £970 (women £950) at age 30 or over on entry. Scale maximum £1252 (women £1171, but being improved under equal pay scheme). Outside London scales are somewhat lower. Promotion prospects. Pay and conditions of service at present under review.

Particulars and application forms from Secretary, Civil Service Commission, Burlington-gardens, London, W.1, quoting No. 75/56/9. Application forms should be returned by 28th June, 1956.

## General Practice

***For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."***

**COUNTY BOROUGH OF HUDDERSFIELD. Applications** are invited for (death) VACANCY in Lindley area (urban). List at present approximately 2100. Residence and surgery available. Apply on Form E.C.16A to the undersigned before 18th June, 1956. H. HOLLAND.

Huddersfield Executive Council, 49, New North-road, Huddersfield.

## Hospital Services: Non-Medical Appointments

**SALFORD. HOPE HOSPITAL. Salford Hospital Manage-**MENT COMMITTEE. BIOCHEMIST required (Senior grade) in the Group Laboratory at Hope Hospital. Wide experience of clinical biochemistry essential. Salary and conditions of service as prescribed by the appropriate National Health Service Whitley Council.

Written applications, stating age and qualifications, and details of experience, to be forwarded to the Hospital Secretary within 10 days of the appearance of this advertisement.

## Miscellaneous

**Esso Petroleum Company. A vacancy exists for a full-**time Medical Officer, well qualified, with good clinical experience and preferably under 40 years of age. Previous industrial experience not essential. Starting salary not less than £1650. Good pension scheme.—Full particulars may be obtained by writing to the Chief Medical Officer, Esso Petroleum Company 16, Charles II-street, London, S.W.1.

**Required—partnership with view to eventual succession,** residential area London. Capital available for house purchase.—Address, No. 228, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

**Required, medical man, part-time, assist surgery, ses-**sional basis. S.E. London.—Address, No. 229, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

**"Pregnancy Diagnosis by the Xenopus Method," 24-hour** service. Send specimen of urine and £1 1s. fee. Haematology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

**Applicants for posts requiring testimonials copied or** duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

**Typewriting and Duplicating. First-class work at moder-**ate prices by experienced medical typists. Electric machines.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

**Mobile X-ray Unit for Radiography and Fluoroscopy by** Siemens-Schuckert (GB) Ltd. Model MM 90/40. Maker's Serial No. 861121 with Type P61924 "Arromax A" tube, cable and circulator. Ratings: Radiography, 90KV 40mA 0·5 seconds, with correspondingly longer times for lower tube currents; Screening, 90KV 5mA 30 minutes. Current: single phase, 230/250 volts. Date of manufacture: 1944. Ancillary equipment: 15 in. × 15 in. fluorescent screen.

The unit is in excellent condition, and may be inspected at our works, by appointment with the Works Engineering Department, K. & L. STEELFOUNDERS & ENGINEERS LTD., Letchworth, Herts.

**New Austin Cars from £270 13s. 6d. down, 24 payments** £12 8s. 2d. Reduced interest and insurance.—SAUNDERS, Austin House, 140, Golders Green-road, Golders Green, London, N.W.11.

**XLV Pure Devon Honey. The famous and "so delicious"** Heather/Clover blend. Six 1-lb. jars 32s. Carriage paid. Twelve 1-lb. 60s.—WOODBURY APIARIES (L), Woodbury, near Exeter.

**Microscopes. Highest prices paid for good modern types.** Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

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*J. Amer. med. Ass.*, (1955): **158**, 459.

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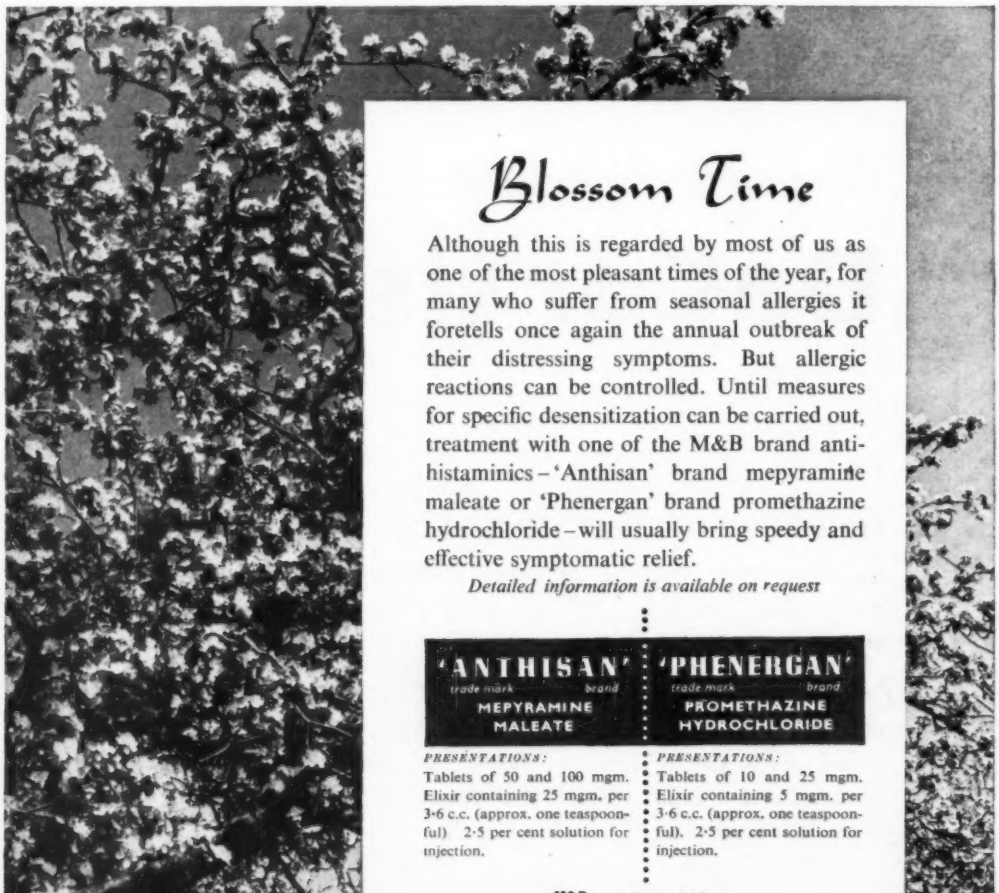

# Blossom Time

Although this is regarded by most of us as one of the most pleasant times of the year, for many who suffer from seasonal allergies it foretells once again the annual outbreak of their distressing symptoms. But allergic reactions can be controlled. Until measures for specific desensitization can be carried out, treatment with one of the M&B brand antihistaminics – 'Anthisan' brand mepyramine maleate or 'Phenergan' brand promethazine hydrochloride – will usually bring speedy and effective symptomatic relief.

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Tablets of 50 and 100 mgm. Elixir containing 25 mgm. per 3·6 c.c. (approx. one teaspoonful) 2·5 per cent solution for injection.

**'PHENERGAN'** *trade mark* *brand*
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*PRESENTATIONS:*
Tablets of 10 and 25 mgm. Elixir containing 5 mgm. per 3·6 c.c. (approx. one teaspoonful). 2·5 per cent solution for injection.

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